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By-Product Ammonia

THE situation that arose some 20 years ago due to the vast increase in capacity of works producing synthetic ammonia is well known to chemists and chemical engineers. It arose largely because synthetic ammonia plants were erected in many European countries primarily as a measure of defence, the product being converted into nitric acid, the basis of the production of high explosives. The vast disparity between the war-time needs for nitric acid and the peace-time needs for fertilisers has caused by-product ammonia to become a source of expense and embarrassment to the industries producing it, instead of, as formerly, their chief source of extraneous revenue. The paper presented by Mr. P. Parrish at last week's meeting of the Institution of Gas Engineers reveals the steps that in his opinion should be taken, and have been taken to meet the situation that has arisen. They demand the close co-operation of the carbonisation industries with the chemical manufacturer proper, and Mr. Parrish's paper may very possibly prove the starting-point of many such arrangements that will cover the country.

In brief, Mr. Parrish sees that it is not possible for any but the largest works to manufacture sulphate of ammonia today at a cost that will yield a profit. He sees, moreover, that the sulphate may not always be the best salt of ammonia to manufacture. He suggests, therefore, that coke ovens and gasworks should concentrate their gas liquor, without removing its carbon dioxide and hydrogen sulphide content more than is necessary for the operation of the plant, and that this concentrated liquor should be sent by rail to the nearest chemical works equipped to deal with ammonia. The radius of area over which a central chemical works can collect ammonia liquor is calculated as 70 to 100 miles, so that there will be room for several schemes of this character up and down the country. In London, of course, the Gas Light & Coke Company and the South Metropolitan Gas Company in effect operate a scheme of this type within their own concerns, and it may be that if no chemical manufacturers come forward in other areas, the large gasworks will undertake the work on behalf of the undertakings in their area. Gas undertakings, however, are not in the best position to work up ammonia, because, with a few exceptions, they are not chemical manufacturers who possess real chemical works under the control of a chemical engineer.

> *Concentrated gas liquor can be utilised at central chemical works, not only in the production of ammonium sulphate, but of other important nitrogenous fertilisers. Indeed, it can be converted to nitric acid, and ammonium nitrate produced, or it can be absorbed by phosphoric acid, in the manufacture of mono-ammonium or di-ammonium phosphate.—P. Parrish.*

The financial arrangements suggested by Mr. Parrish involve either purchase of the concentrated liquor outright on the basis of sliding scales based on variations in the market price of sulphate of ammonia, or participation by the gas undertaking or coke oven concern in the surplus profit on the ammonia manufacture after a predetermined profit has been made by the chemical works. Both methods present possible difficulties. A price based on sulphate of ammonia may not take into account the different value of ammonia as a raw material for nitric acid under possible conditions which all hope will not arise; on the other hand, the difficulty of book-keeping in a works making several products might be found to lead to disputes. This second method will work, and has worked, when a central works has taken all the output of a number of contributing works, and has engaged in no other form of chemical manufacture. Undoubtedly, this problem of by-product ammonia is of the greatest importance to the gas and coke oven industries, and Mr. Parrish should receive the thanks of those concerned for showing how that problem is to be solved.

A feature of Mr. Parrish's paper is the information that he has given in regard to the production of sulphuric acid from the hydrogen sulphide contained in the gas liquor. This is perhaps as near as we are likely to get to the solution of the old problem of utilising the sulphur contained in coal for the production of the acid necessary to convert ammonia into sulphate. The next stage is for the carbonising industries to study how they can increase the hydrogen sulphide content of gas liquors. Mr. Parrish has certainly done a good piece of work in developing the sulphuric acid plant that he describes and his plant which was designed to produce 75 tons of 70 per cent. acid per week, and subsequently 100-120 tons, lends itself to such easy control that "a shift worker operating another process is responsible for the working of the plant."

The study which Mr. Parrish has made of the growth of crystals of sulphate of ammonia, a study which has also been pursued by his colleagues across the river, Mr. Adams of Beckton and his staff, has enabled means to be put forward for the production of large crystals of sulphate designed to meet Continental competition in this field.

NOTES AND COMMENTS

Glass Research at Sheffield University

THE opening of the new buildings of the Department of Glass Technology of Sheffield University by Lord Riverdale on Monday, marks an important stage in the development of the Department, the pioneer institution of its kind in the world. In May, 1915, Professor W. E. S. Turner made a systematic survey of the glass industry of Yorkshire and his report, presented to the Council of Sheffield University, emphasised that there was in this industry an almost entirely virgin field for service on the part of the University. As a result, the Council established the Department of Glass Technology in June, 1915, and Professor Turner was elected to act as its organiser. Although at the outset the glass manufacturers did not see their way to contribute to the cost of the Department, in 1916 three of the most important glass bottle manufacturers' associations decided to make substantial grants. In the same year the Glass Research Delegacy (now known as the Glass Delegacy) was set up for the purpose of administering the funds intended for the work of the Department; the Delegacy is composed partly of University representatives and partly of industrial representatives. The Department also works in close association with the Society of Glass Technology founded by Professor Turner. This valuable co-operation with industry and with research workers throughout the world must be unique among research departments of the kind.

Hydrogen Sulphide "Anæsthesia"

THE Institute of Chemistry has undertaken an inquiry, at the suggestion of the Society of Public Analysts, as to the extent to which laboratories of institutions, companies, etc., would be prepared to order liquid hydrogen sulphide supplied in cylinders, instead of preparing it in Kipp's apparatus, and about 150 heads of laboratories have been circularised on the subject. A note on the inquiry in the current issue of the Institute's "Journal and Proceedings" contains a most useful statement by the President, Mr. W. A. S. Calder, who has had very extensive experience in the production and handling of hydrogen sulphide. He says that he desires to impress all concerned that, when people are overcome with this gas, it acts rather as an anæsthetic than as a poison. Even though there may be no apparent sign of life, the sufferer can invariably be brought round by means of persistent artificial respiration and oxygen. In several cases, over twelve hours' treatment were necessary before any sign of recovery was apparent. Having had experience of 100 or more cases, he is convinced that prolonged and persistent efforts should be made to restore any person overcome by this gas.

Growth of Sulphuric Acid Production in Germany

THE trend of sulphuric acid production in Germany has been upward in recent years, in keeping with the increasing requirements of consuming industries, especially those manufacturing cellulose fibres, explosives and munitions, sulphates, and, to a lesser extent, dyestuffs, pigments and metal products, according to a report from the American Consulate General, Frankfort-on-Main. Although exact data are not available, an important increase probably occurred in 1938 for meeting the heavily increased requirements of Germany's vigorously prosecuted policies of autocracy and national defence. Because of the scarcity of sulphuric acid in Germany in 1937 it was impossible to supply all of the acid requirements of fertiliser manufacturers. The use of gypsum as raw material for ammonium sulphate was re-established. The number of plants producing sulphuric acid in operation in Germany which for several years had been 63, was increased to 66 in 1937, and a further increase in number doubtless occurred in 1938. Although, of the 66 plants in operation in 1937, only 21 used the contact process wholly or partly (compared with 45 plants employing the chamber process), these 21 plants nevertheless increased their share of the total national production to 53.5 per cent., from 51 per cent. in 1936. Eight very large plants (with annual capacity of over 50,000 metric tons) supplied 44 per cent. of the total output.

The World's Fair

BIGGER than any exhibition ever held previously, the New York World's Fair covers an area of more than 1,200 acres, extending for a length of three miles and a width of one and a half miles. The fact that some 10,000 trees were planted and 15 miles of roads and avenues a hundred feet wide were built within the Fair grounds gives some idea of the scale on which the Fair has been prepared. The general theme of the Fair is "Building the World of To-morrow" and it presents aspects of past, present and future activities in industry, science, and the arts. The Fair is truly international in character, about sixty nations being represented. The United Kingdom Pavilion, according to reports one of the most impressive in the exhibition, besides illustrating outstanding events in the history of the country and depicting places and incidents of interest in the United Kingdom, contains a gallery devoted to industrial exhibits by a number of representative British industries, such as metals and engineering, leather, china, and woollen and linen goods. According to the report on the Fair by our correspondent (page 451), exhibits of interest to the chemical industry are not centralised in one pavilion but some may be seen in the Hall of Industrial Science, the Wonder World of Chemistry (the E. I. du Pont de Nemour building), the Metals building, and the Glass Centre. Since a purpose of the exhibition is to show many of the recent industrial developments which lend themselves to popular representation, chemical products as such do not feature to any extent. But there is an abundance of exhibits throughout the Fair which illustrate some of the major achievements in the application of chemistry to the process industries. Plastics, glass, rayon and petroleum are a few examples of these industries which are exemplified at the Fair on a bigger and more spectacular scale than has ever been attempted before.

Progress of the Gas Industry into the Chemical Field

TOWARDS the close of the Murdoch Centenary Lecture at last week's annual general meeting of the Institution of Gas Engineers, Dr. E. F. Armstrong made some interesting prophecies regarding the future of the gas industry. He said that the industry would have to think along new lines involving *inter alia* the best possible use of the secondary products. Coke had already been taken in hand. The industry was learning how to extract benzole, but at the present only about half the quantity in the gas was taken out by the industry as a whole. He thought that the price of benzole was likely to increase over a period of years, so that there would be every incentive to extract all of it. Tar was still a disappointing product. The dye and chemical industry took too little of its in-

dividual ingredients and they were unable to pay a remunerative price for it. Creosote for hydrogenation was regarded merely as the equivalent of crude oil. The products of the tar industry had yet to be properly evaluated, Dr. Armstrong continued, and there was room for several Perkins to help in that investigation. Modern developments in the oil industry indicated that it might be profitable to crack the tar to elementary gases and re-synthesise these to liquid hydrocarbons of high octane number, the commercial value of which was high. It was possible, he said, to picture the gas industry in that manner becoming an important source of oil from coal and at the same time enjoying a better revenue from its tar, and it was conceivably possible that much of a gas works plant could be devoted to making petrol from synthesis gas during the summer. He considered that research into this problem, preferably in co-operation with an oil company, should not be long delayed. The fate of the industry's third product, ammonia, was not in the hands of the gas industry, since its price depended on the makers of the synthetic article. The industry had another product, carbon dioxide, he pointed out, of which it made no use. If Great Britain ever became refrigerator conscious, like America, the sale of this as dry ice might be a factor in the industry's operations.

Boots' Export Trade Increasing

IN these days when the general conditions for foreign trade are difficult, to say the least, it is a matter for self-congratulation when a company is able to maintain its overseas business from year to year. In the case of Boots Pure Drug Co., Ltd., however, Lord Trent announced at the company's meeting a steady *increase* in the company's export trade. He added that export trade was a matter of such vital importance to the country that the company intended to develop energetically all possible openings in that direction, either on their own account or possibly in co-operation with other pharmaceutical manufacturers. Another point made by Lord Trent in his speech was that although the company's profits had fallen by a few thousand pounds below the record figure of the previous year, actual sales, beat all previous figures. Referring to the increasing importance of Protamine insulin (with zinc) suspension, he added, " that the manufacture of this product is not controlled in this country by foreign interests is due solely to our action."

An Exhibition on an Industrial Estate

THE first exhibition of industrial products ever to be held on an industrial estate in this country was opened on Tuesday at the Scottish Industrial Estate at Hillington, Glasgow. It is only twenty months since the first factory on the estate was opened and already eighty firms have factories operating on the site, and inquiries for space are still coming in. The exhibition, which was open for three days, had more than fifty stands demonstrating the wide variety of goods now being produced in the estate factories. Among the firms taking part were: Compact Chemicals, Ltd. (shoe polishes and chemicals); Carbonald Margarine Co., Ltd.; Industrial Gases (Scotland), Ltd.; North British Oil Co., Ltd. (paint and varnish); Saturn Oxygen Co., Ltd.; Stellar Oils, Ltd. (oil refiners); Texas Oil Co., Ltd. (petroleum products); Titanine, Ltd. (aeroplane dope and cellulose lacquers); Plastics (Glasgow), Ltd.; Malco Products (soaps and disinfectants); Textol Ltd. (industrial emulsions, chemicals); Charles Tennant and Co., Ltd. (chemicals, tar products, etc.).

Prussic Acid in Linseed Cake

Alleged Poisoning of Cattle

THE hearing of the civil action in the Kilmarnock Sheriff Court in which cattle poisoning is alleged (see *C.A.*, May 20, 1939, page 375) was concluded on June 8. When the case was resumed on June 6 before Sheriff Martin Laing, the final witness for the defenders gave evidence, and counsel's address on behalf of the pursuer was given. On the following days defenders' counsel addressed the Sheriff, and after pursuer's counsel had replied his Lordship made avizandum.

The case was one in which Thomas Drummond, farmer, of Mauchline, Ayrshire, sued A. Paterson and Sons, grain and hay merchants, of Kilmarnock, for payment of £419 11s. 3d. in respect of alleged loss and damage to calves belonging to him through using feeding stuffs supplied by the defenders. In particular, he alleged that an analysis of the linseed cake included in the feeding stuffs showed that it contained substances capable of yielding hydrocyanic acid. Defenders denied pursuer's averments, and alleged that the pasture in pursuer's field was poor in quality, and contained buttercups and other weeds which were poisonous and injurious to cattle.

John Westall Pearson, the last witness for defenders, stated that he was a partner of the firm of Pearson, Beckitt and Co., Glasgow, up till 1899, when the business became merged in that of British Oil and Cake Mills, Ltd. He was chairman of British Oil and Cake Mills, Ltd., which was an associated company of Lever Bros. and Unilever, Ltd. He had been engaged in the industry of seed crushing and cattle food manufacture for over 50 years. Public attention was first drawn to the fact that linseed contained substances capable of yielding prussic acid in 1908 at the time of the Java bean cases. Up till that time he did not think that manufacturers in the trade knew anything at all about potential prussic acid in linseed.

A great many tests were then made, and as a result it was found that the potential prussic acid in cake made from Argentine seed was between 1 and 2 grains per lb., and in the case of cake made from Indian seed between 3 and 4 grains per lb. It was by no means abnormal to get figures over 4 grains per lb. for Indian seed. In this case 3.85 grains per lb. was the figure given, and there must have been millions of tons of linseed cake with that prussic acid potentiality consumed by cattle.

Manufacturers of linseed cake from time to time received complaints of injury to calves fed on linseed meal, and they had periodically issued circulars warning farmers that the gruel must be boiled. It should be well known among farmers that a linseed preparation should not be fed wet unless it had been boiled.

In his fifty years' experience he had never heard of a single case in which linseed cake fed dry had caused poisoning of cattle. Speaking as the largest manufacturer of linseed cake in the world, and in spite of all he had heard in this case, it was in his opinion a perfectly harmless and safe feed for cattle.

THE Koela Producer-Gas Plant Co., announces that it has entered into an agreement for the supply of a minimum of 1,500 of its gas producer plants to India within the next two years. This is the largest single contract for gas producers ever made, and is the sequel to successful operation of a number of units in India over an extended period. It looks as though India is to be more forward in the use of producer-gas vehicles than the United Kingdom, even though there, with Great Britain's ample coal supplies, it means the use of coal or its derivatives in place of imported oil. Gas-producer motive power for vehicles is obtained in Germany from a variety of substances including lignite, brown coal and heather roots. In France, producer-gas vehicles are exempt from taxation, and in Italy, all public transport vehicles are being turned over to producer-gas.

Progress in Metal Polishes and their Raw Materials

By
GEORGE S. COLLINGRIDGE, B.Sc.

ALTHOUGH present-day metal polishes show little or no fundamental difference from those of twenty or even thirty years ago, there have undoubtedly been minor developments in two main directions, i.e., the availability of a wider range of raw materials and the demand for polishes in different physical forms. By the latter, it is meant to imply that liquid polishes have gained in favour, at the expense of the once-popular pastes and " putz pomades "—and also that there is now a much more restricted market for brass polishes containing coarse abrasives and a correspondingly wider field for silver and chromium polishes, all of which are (or should be) distinguished by the great care taken to ensure fine, uniform particle size and freedom from all other constituents likely to cause damage to the metal. That modern conditions lay emphasis upon chromium, silver, stainless steel, aluminium and glass, rather than on brass and copper, goes without saying.

The Trend of Progress

Historically, the trend of progress has been from the earlier tripoli, pumice and oxalic acid polishes to the infusorial earth and soap types, and from them to the ferric oxide and " putz oil " polishes, and so to the paraffin and abrasive mixtures and the naphtha, soap and abrasive suspensions of the present day.

As to the newer raw materials, one may note, at the outset, synthetic waxes, triethanolamine and morpholine soaps, diglycol stearate and laurate, bentonite, bleached and unbleached montan waxes, deodorised kerosene, non-inflammable solvents such as carbon tetrachloride, colloidal clays, improved diatomaceous earths, steam-distilled pine oil, etc. Some of these will be referred to at greater length below. Meanwhile, in this connection, the following British Standard Specifications are to be noted: Carbon Tetrachloride (No. 575, 1934) and Turpentine and White Spirit (244, 1936).

Abrasive materials are essential constituents of practically all metal polishes. Many writers have referred to the endless search for materials characterised by " a minimum scratching as distinct from polishing action," but in reality there is no such distinction possible, for all abrasive agents depend for their effect upon a certain degree of scratching. If the abrasive is not uniform, the necessary but very fine scratch-marks, which appear to the naked eye as a smooth lustre, will also be accompanied by a few deep gouges, which have the characteristic appearance of scratches. Similarly, a uniformly harsh abrasive will channel too deeply into the metal, while an unnecessarily mild abrasive will pass to and fro over the surface of the metal without being able to impart the desired lustre. The search for a suitable abrasive or mixture of abrasives, and the establishment of a uniform source of supply, is therefore one of the prime essentials of metal polish manufacture.

Types of Abrasives

The nomenclature of metal polish abrasives is apt to cause a certain amount of confusion—emery, tripoli and kieselguhr being sometimes referred to, for example, as corundum, rottenstone and diatomaceous earth respectively. In fact, the term " diatomaceous earth " may be regarded as synonymous with kieselguhr, guhr, infusorial earth, fossil flour, fossil earth, tripolite, ceyssatite, terra silicea and tellurine; it being actually a soft, earthy rock composed of the siliceous skeletons of small aquatic plants called diatoms, and marketed as a whitish or discoloured powder (or in blocks) showing marked porosity and ability to take up large amounts of water.

The following abrasives have been used in metal polish manufacture: pumice, emery powders, kieselguhr, silicas, amorphous silica, white siliceous earths, precipitated and prepared chalks, precipitated calcite, tripoli, bentonite, china clay, whiting, putty powder, aluminium oxide, chrome oxide, tin oxide, common salt, Fuller's earth, calcium phosphate, rouge and heavy magnesium carbonate. Of these, for the majority of applications, silica is the most widely employed, either in the form of a ground crystalline silica or as pumice or pumicite. As C. S. Kimball has very truly pointed out, the selection of the proper abrasive between these two main types of silica, present in the market in at least a dozen distinct variations, is complex. The heavy water-base pine-oil polishes require a sharp silica. As the water-base ammonia type product became thinner in consistency with technical developments in the method of stabilising it, there has been a corresponding necessity for decreasing the sharpness of the silica used, in order to avoid excessive scratching. The neutral naphtha type product must use a milder form of silica, because it has practically no other ingredient present to " buffer " the sharpness of the silica and thus prevent scratching. The same thing is substantially true of the majority of the naphtha-base ammonia type polishes.

Next in popularity to the silica and pumice abrasives come tripoli, emery, calcite and china clay—with precipitated chalk, whiting, rouge, Fuller's earth and kieselguhr as the most satisfactory bases for the finer grades of polish, such as those used for silver and chromium ware.

Other Constituents

Special considerations to be observed when selecting suitable abrasive materials will be dealt with separately at the end of this article. Meanwhile the remaining constituents of metal polishes may be briefly reviewed. First of all come the soaps, which are nowadays to be found in the majority of metal polishes, even though in low proportions only. Such soaps include ammonium oleate and linoleate, potassium oleate, triethanolamine stearate and oleate, sodium stearate and oleate; and ordinary hard soap, soap flakes and soap powder.

These soaps act as detergents, emulsifying agents and, to a smaller extent, as mechanical buffers to modify the abrasive action. Soft soap is liable to produce a smeared surface, if too high a proportion is employed. In some of the most up-to-date liquid metal polishes, the usual procedure is to stabilise an aqueous suspension of a suitable abrasive with ammonia soap, produced *in situ* with the addition of excess ammonia. Colloidal clays are particularly suitable for use in this type of polish, as they definitely assist in the stabilisation of aqueous suspensions.

In addition to soaps, there are other detergents to be considered. These include paraffin oil, oxalic acid, sodium carbonate, trisodium phosphate and tetrasodium pyrophosphate. The chief advantages of paraffin are that (a) it acts as a grease solvent and loosens the dirt associated with such grease, thus greatly facilitating the action of the abrasive, and (b) it is inexpensive. Its disadvantage is that it is oily in character and, unless carefully incorporated, will tend to smear the metal and impair the lustre. If its odour is objected to, the deodorised kerosene now commercially available may be used instead. As to oxalic acid, which once was so popular, but has now fallen into disrepute, its toxic properties alone may be said to render it superfluous. The alkalies are, however, extremely useful—as they definitely aid in the emulsification and removal of the grease and tarnish film, while at the same time they make the use of excessive amounts of soap unnecessary.

The other main group of constituents embraces the various vehicles, those most commonly found being water, paraffin oil, naphtha, turpentine and turpentine substitutes (white

spirit, dipentene, etc.) Other solvents used in this connection are carbon tetrachloride, deodorised kerosene, tetrahydronaphthalene (tetralin), alcohol, cyclohexanol and methyl cyclohexanol, steam-distilled pine oil, etc. The function of the vehicle is somewhat complex. It acts as a suspending medium for the abrasives, as a solvent for the detergents; in addition to which it facilitates the suspension and removal of the treated débris on the surface of the metal.

The viscosity of the vehicle is an important factor in the formulation of a satisfactory liquid metal polish. Thus the low suspensory power of water is closely associated with its viscosity, which may necessitate either the use of colloidal clay as a suspending agent or the incorporation of a product designed to increase the viscosity. Generally speaking, the less viscous polishes are the more satisfactory.

A word about the nature of the tarnish film: this usually consists of grease, dirt and metal salts (notably oxides and sulphides) formed by the action of the atmosphere. It is this film that has to be removed, by the combined action of abrasive, detergent and vehicle—the subsequent polish being imparted by the abrasive.

Owing to their tendency to smear the metal or corrode the surface on which they remain, free fatty acids are to be avoided. Similarly, the proportions of paraffin wax, ceresine, montan wax, petroleum jelly, etc. (if these are used) should be kept within very low limits.

Other potential constituents of metal polishes are colour and perfume. Sometimes the polish has the natural tint of one of the raw materials (e.g. rouge, tripoli, kieselguhr). Or it may be coloured artificially by means of synthetic ochre or soluble dyestuffs. Perfume materials, when incorporated, are usually of a crude and simple character—intended chiefly to mask unpleasant odours. Nitrobenzene, once widely used, is dangerously poisonous and should definitely be ruled out of consideration. It is a moot point whether "perfumed polishes," as such, would be likely to meet with widespread public acceptance—but the writer certainly feels that there is room for experiment in this direction. The following formulæ for disinfectant perfumes, devised a few years ago by Dr. F. W. Brown, might well be useful starting-points for work on the lines suggested: (a) oil of red thyme 15 grams, para cymeme 48 grams, benzylidene acetone 1 gram; (b) terpineol 4, benzyl acetate 2, diphenyl oxide 1, citronella oil 2, artificial sassafrass 3, origanum (technical) 4.

Comparison of Formulæ

The metal polish formulæ that follow are designed to give a much clearer picture of the lines on which experiments should be carried out than could be expressed by a mere examination of the raw materials described above.

A typical old-fashioned metal polishing paste consisted approximately of tripoli 20 lb., petroleum jelly 4 lb., Japan wax 1 lb., kerosene 3 pints, naphtha 1 pint, and oleic acid 2 pints. This had the disadvantage of being greasy and hard to manipulate although, with prolonged rubbing, it could certainly impart a satisfactory lustre. The two formulæ that follow are suggested as satisfactory alternatives, comparatively free from these disadvantages:—

(*a*)	lb.	(*b*)	lb.
Pumice, powdered ..	30.0	Levigated chalk ..	30.0
Kieselguhr	25.0	Tripoli, first quality ..	24.0
Hard soap, powdered ..	1.5	Chromic oxide	5.0
Oleic acid	12.8	Oleic acid	15.0
Paraffin oil	30.0	Stearic acid	6.0
Aluminium stearate ..	0.2	Paraffin oil	12.0
Montan wax, bleached ..	0.5	Paraffin wax (50/52°C.)	4.5
Perfume and colour ..	q.s.	Ceresine (58/60° C.) ..	3.5

Formula (b) is simply a variation on a well-known American type of product; the abrasive materials may be replaced by others, if desired. In formula (a) the aluminium stearate serves to thicken up the paraffin oil, without calling for the inclusion of an undesirably high percentage of wax.

As for liquid metal polishes, Kimball has already grouped them into the following main categories:—

(1) neutral, naphtha-base metal polish,
(2) naphtha-base, ammonia type metal polish,
(3) water-base, pine oil type metal polish, and
(4) water-base, ammonia type metal polish.

There are, of course, other preparations that do not conveniently fall into any of these categories, e.g., polishes of a non-inflammable type, based on carbon tetrachloride, and the newer liquid polishes that contain naphtha, abrasive, water and triethanolamine oleate. As a general classification, however, the types listed above probably include over 20 per cent. of the total liquid metal polishes now marketed.

Formula for a Good Quality Polish

A good quality metal polishing liquid may be prepared, in accordance with the following formula:

Naphtha	62.0 lbs.
Oleic acid	1.0 ,,
Abrasive	7.0 ,,
Triethanolamine	0.33 ,,
Ammonia (26°)	1.0 ,,
Water	128.0 ,,

In one container mix together the naphtha and oleic acid to a clear solution. Dissolve the triethanolamine in the water separately, stir in the abrasive, if it is of a clay type, and then add the naphtha solution. Stir the resulting mixture at a high speed until a uniform creamy emulsion results. Then add the ammonia and mix well, but do not agitate as vigorously as before. This polish has excellent cleansing properties and removes much of the dullness from metals by the solvent action of triethanolamine. The emulsion is fairly stable and will not separate as when made from straight ammonia. In use, the metal is first gone over with this polish, which dries leaving a fine white coat. Rubbing with a dry cloth now brings out a high lustre. If a non-colloidal abrasive is to be incorporated, it should be mixed with the oleic acid and naphtha instead of with the water, and rather higher proportions of acid and triethanolamine will have to be used.

A non-inflammable water-base polish may be prepared according to the following formula:

Silica (fine grade) ..	10.0 lbs.
Tripoli, air-floated ..	11.0 ,,
Colloidal clay	1.5 ,,
Oleic acid	5.0 ,,
Ammonia, 26° Bé ..	3.0 ,,
Pine oil, steam distilled	4.0 ,,
Water	65.5 ,,

Metal polishing cloths or pads have been popular for several years in the United States, but have only recently begun to appeal to the public in this country. They are made by dipping bound, rectangular pieces of Canton flannel (size 18 × 24 inches) in a suitable liquid polish—the constitution of which may be as follows:

Kieselguhr	15 parts
Ammonium linoleate ..	8 ,,
Glycerine	2 ,,
Water	75 ,,

Other raw materials employed in this type of dipping liquid are benzine, petrol, ammonia, sulphonated oils, castor oil, whiting, etc. The flannel pads, after immersion, are gently wrung out and allowed to dry, in a place remote from fire.

A rather interesting formula for a patented metal polish (D.R.P. 664, 330) contains about 77-84 per cent. very finely divided diatomaceous earth or pumice, 10-13 per cent. soda or potash-soap, 6-7 per cent. ammonium oxalate or sulphate, about 0.5 per cent. light mineral oil and, possibly, 2 per cent. bentonite.

Special Considerations

The following points are to be noted, in connection with the foregoing remarks. Precipitated calcite is unsuitable for use in water-base polishes. Bentonite and china clay may be contaminated with hard quartz or silica particles, so that, unless the best qualities are purchased in the first place, they should be pre-treated with water and the gritty sediment decanted off. Microscopic examination of abrasives is useful, as is also a laboratory-size abrasive testing machine,

capable of evaluating wear and tear on different metal surfaces.

In connection with the *p*H of metal polishes, it is worth noting that zinc and aluminium are attacked at a *p*H above 10, tin if the *p*H is above 11, brass above 12.5, and high-silicon iron at *p*H above 13.

Ammonium salts can with advantage be used in liquid metal polishes as stabilising agents. They also make it possible for the manufacturer to use less soap and consequently to make a less viscous polish. The ammonium salts of certain organic acids have been claimed to be particularly beneficial, because they do not only aid in stabilisation, but also exert a definite chemical cleaning action superior to that of ammonia alone. Future progress in metal polishing liquids would certainly appear to lie in the direction of the water-base type, consisting essentially of abrasive, water, ammonia or triethanolamine soap, excess ammonia, colloidal clay and, very probably, certain of the salts of ammonia.

Incidentally, the care that should be taken to ensure a uniform source of supply for abrasive materials is well exemplified by the experiments of R. H. Auch, who examined four popular American polishes and found that they each contained diatomaceous earth as the sole abrasive constituent, in proportions varying from 15 to 19 per cent. Yet these four silver polishing preparations, though apparently so similar in constitution, gave vastly different results when tried out by an abrasive testing machine. This not only implies that all abrasives should be carefully selected, but also that continued testing of batches is essential, in order to ensure uniformity of action.

Chemical Matters in Parliament

Proprietary Medicines—Morecambe Chemical Factory—Trafford Chemical Co.

Mr. Garro Jones asked the Minister of Health in the House of Commons whether, in his present consideration of whether further control should be imposed on the sale of proprietary medicines, he would extend his examination to the control of drug sales in general and pay due regard to the desirability, in the interests of public health, of regulating the growing volume of sales of numerous kinds of drugs and packed medicines by persons of no training or qualification to the increasing commercial detriment of qualified pharmacists who had an essential place in our public health system.

Mr Elliot replied that he would consider the question whether in the interests of public health any further special control was necessary in regard to the sale of drugs by persons other than qualified pharmacists.

Morecambe Chemical Factory

Mr. Simpson asked the Secretary of State for Air whether he was now in a position to say what was the result of the Government's consideration of the protests against the projected chemical factory at Morecambe; and whether, in the interests of employment in the depressed areas in South Lancashire, a change of site could be made.

Captain Balfour, in replying, stated that the Secretary of State for Air received a deputation on this matter from the Morecambe and Heysham Council. He explained to them that an exhaustive survey of the West coast had been made with a view to finding a site which would not interfere with amenities and would if possible be in a special area. There were, however, a number of technical and strategic factors which seriously limited the choice of suitable sites for plant of this character, and it had not been possible to find any other site which met all the requirements.

Water Content of White Bread

Mr. De la Bère asked the Minister of Health whether, since as the result of an analysis white bread made by a large London bakery was found to contain 37.6 per cent. of water, he would have an analysis made of bread from various districts throughout the country and consider introducing legislation to prohibit such a high percentage of water in bread sold throughout this country.

Mr. Elliot: The percentage of moisture content referred to is not, as I am advised, so high as to call for the action suggested.

Oil Exploration

Sir T. Rosbothom asked the Secretary for Mines whether he was in a position to state what were the prospects of finding oil from the result of borings at Formby.

Mr. Lloyd replied that the D'Arcy Exploration Co. who were the licensees for that area were at present engaged in drilling boreholes for geological purposes with a view to determining the nature of the deeper structural conditions. In one of those boreholes a certain quantity of oil had been met with, but it was impossible at that stage to assess the value of the discovery.

The Trafford Chemical Co.

Mr. Ellis Smith asked the President of the Board of Trade in the House of Commons on Tuesday what arrangements, to the knowledge of his Department, existed between the Trafford Chemical Co., the I.G. Farbenindustrie A.G., and Imperial Chemical Industries; had any licences been granted to any of those companies, and, if so, for what purpose; and, under the joint arrangements, were any Government contracts being carried out?

Mr. Stanley: I am informed that the shares of the Trafford Chemical Co. are held by the other two companies mentioned, and that the Trafford Chemical Co., when in operation, will devote itself primarily to the manufacture of certain speciality dyestuffs which have hitherto been imported. I am not aware that any Government contracts with this company are in contemplation. No applications have been made by the company for licences to import dyestuffs, but licences are granted frequently to I.G. Dyestuffs, Ltd., and occasionally to Imperial Chemical Industries, Ltd.

Mr. Smith: In view of the by-products produced by this industry, and in view of the aggressive intentions of two continental countries, are not arrangements of this character to be deprecated from the point of view of the people of this country?

Mr. Stanley: It seems to me to be of immense advantage to the people of this country that dyestuffs which at the present moment have to be imported should in future be manufactured here.

Optical Glass Supplies

Mr. W. S. Morrison informed Sir A. Somerville in the House of Commons on Tuesday that supplies of optical glass were sufficient for current requirements and arrangements were being made for the increased supplies required on account of the expansion of the Army.

FOR the first quarter of 1939, methanol production in the U.S.A. included 1,052,741 gallons of crude spirit, and 7,136,787 gallons of synthetic spirit. For the same period of 1938 the figures were, respectively, 1,300,077 gallons, and 7,531,331 gallons.

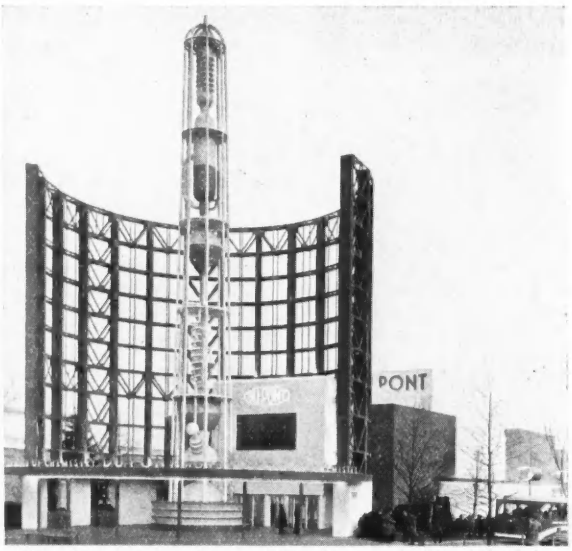
THE WORLD'S FAIR

Exhibits of Interest to the Chemical and Allied Trades

From a Special Correspondent at New York

FIRST of all, it should be remembered, the New York World's Fair is for the man in the street and not for the expert; it is not a trade show nor even an industrial exhibit, it is an entertainment. A very interesting survey drawn up by General Motors gives a fairly sound idea of what industrial progress is being made and what is to be seen at the Fair.

The report states that there has been tremendous progress in the field of nitroparaffins and quotes the words of Mr. Theodore P. Walker, president of the Commercial Solvents Corporation: "Not only do the nitroparaffins offer prospects for the development of a wide range of new industries, but they also are of interest because the basic raw materials for their manufacture is natural gas, large quantities of which are being wasted to-day." Another important discovery coming from chemical research is nylon, a wholly new organic textile material. First announced a few months ago by E.I. du Pont de Nemours & Co., nylon is at present only being marketed in the limited quantities permitted by a pilot plant, but the company is constructing an 8 million dollar plant at Seaford, Delaware, and enlarging its facilities at Belle in West Virginia at an expenditure of 2 million dollars "as concrete evidence of its confidence in the new product."



E. I. Du Pont de Nemours' Pavilion at the World's Fair.

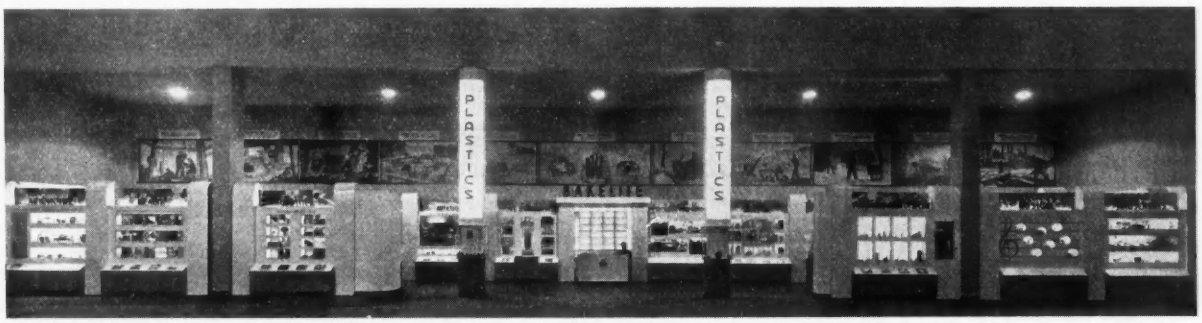
The recent development of large-scale production and shipment of elemental phosphorus is reported by the Monsanto Chemical Co. as "producing benefits of measurable economic and social value." "This method of producing elemental phosphorus," said Mr. Edgar M. Queeny, President of the company, "has made usable low-grade phosphate deposits and has trebled the availability of the nation's phosphate resources." Pentachlorophenol for wood treatment and preservation was also cited as of great economic significance "because it will stabilise the lumber industry and enable it to compete on a more favourable footing with steel, plastics, cement and other competitive materials." There was also mention of the new vinyl plastic safety glass, a du Pont, Monsanto and Shawinigan development, as having economic and social effects of great importance.

Glass has been highly developed and both in the general report and among the exhibits at the fair, much attention is paid to the new glass fibre. In the unique process of the Ethyl-Dow Chemical Co. at Eurebeach B.C. for extracting bromine from seawater, two hundred thousand gallons of seawater are treated per minute to obtain bromine in the ratio of one pound of bromine to a ton of seawater. The chief use of bromine is as a constituent of anti-knock fuel and in photographic and medicinal industries.

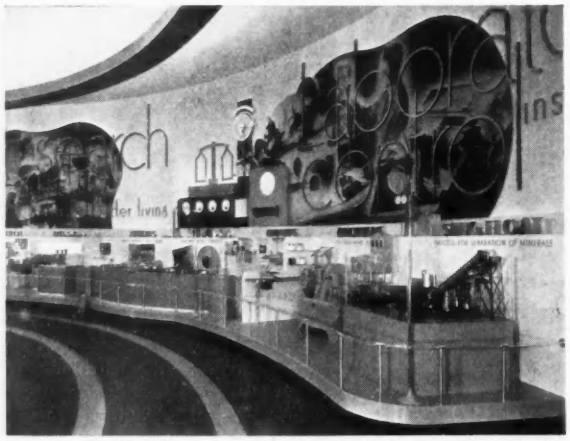
Some of the petroleum industry's most important developments resulting from industrial research in the last last three years are listed by the Pan American Petroleum and Transport Co., as follows: 1, Catalytic cracking; 2, Polymerisation of refinery gases into high anti-knock petrol; 3, Use of liquid propane as a refining agent in a wide variety of processes, mainly in connection with the manufacture of lubricating oils; 4, The manufacture of commercial iso-octane for aviation fuel.

Perhaps one of the most interesting developments is that of synthetic bonds for plywood which will contribute towards greater economy in building construction. Improvements in synthetic resins for paints and varnishes reduce drying time, thus cutting finishing costs and giving added durability. Also the latitude of designs and range of colours in plastic materials have given a new stimulus to many old established products. The Plaskon Co. reports urea-formaldehyde adhesive which may be pressed either hot or cold for the manufacture of plywood veneers and other general adhesive purposes.

The use of woodwaste is also worthy of attention, especially chestnut chips. From such material, formerly discarded as worthless by the tanning extract companies, the Mead Corporation is successfully manufacturing high quality corrugated board for shipping containers. Although not entirely waste products, skim milk and whey-derived by-products are being put to more and more new uses. National Dairy Products Corporation reports that they are being found com-



The interior of the Bakelite Corporation's exhibit at New York World's Fair in the Hall of Industrial Science. At each end automatic compression and injection moulding presses turn out Bakelite phenolic and acetate moulded label souvenirs. Murals depict sources of raw materials for over 2,000 Bakelite plastic products and twenty-two booths demonstrate the important role of plastics in modern life and industry.



Part of the Du Pont exhibit showing in foreground the displays of Neoprene and of the " sink and float " process of mineral separation.

mercially useful notably in the manufacture of lactic acid, calcium lactates and other metal lactates.

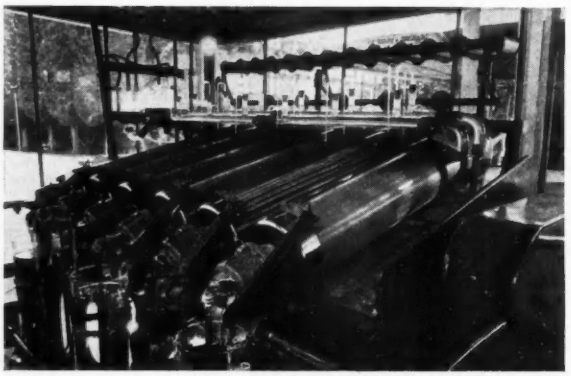
This is a brief survey of some of the recent outstanding chemical achievements in the United States. How were they presented to the public at the New York World's Fair?

In the Hall of Industrial Science, ROHM AND HAAS CO. present a display of Plexiglass and Crystallite plastic materials, and the TEXAS GULF SULPHUR CO. illustrate the mining, refining and distribution of sulphur. There is also a demonstration here of the use of sulphur in the manufacture of paper, artificial silk, explosives and plastics.

It is noticed that the Hall of Industrial Science is dominated by the exhibit of the BAKELITE CORPORATION. The Corporation has made an extensive investigation of the contribution of synthetic resins to improvement of plywood properties. Tests were carried out with synthetic resin adhesives and others: blood albumen, casein, starch, soya bean and vegetable protein, urea-CH_2O resin and phenol-CH_2O resin. The results clearly indicated that urea- and phenol-formaldehyde gave the most durable bond. Protective coatings take an important place in this exhibit. The furniture industry is particularly interested in the phenolic resin varnish which is moisture resistant, hard and durable and resistant to spillage of alcohol. The display shows the tests undergone by the varnishes. The exhibition shows almost every possible use to which Bakelite can be put.

The first impression of " The Wonder World of Chemistry " building of the E.I. DU PONT DE NEMOURS CO. is a 100 ft. tower assembly made up of giant vessels upon which lights play, simulating the flow of coloured liquids. Surrounding the tower is a graceful, curving steel framework simulating a work-way, 70 ft. high and 150 ft. around the perimeter. The interior of the building is planned to give the atmosphere of a vast laboratory. Commentators explain to visitors the derivation of articles in common use in factory, shop and home. A feature of the exhibit is the debut of nylon, the new du Pont textile material. Special attention is paid to hose made from nylon and tests of strength and elasticity are made at the exhibit. The patents covering nylon set forth that the product has great elasticity, strength and wearing qualities; that it presents an excellent appearance; that it is virtually wrinkle free; that it dries rapidly after laundering; and that stockings made of it may be washed repeatedly without material change in their original shape and smooth characteristics. The patents cover the use of polyamide yarn for stockings, pre-boarding of stockings, setting yarns and fabrics, and the use of sodium sulphite for setting. Nylon is shown not only in fibre form, but also as bristles and films. Emphasis is placed on the fact that nylon is the first man-made organic textile fibre prepared wholly from raw materials from the mineral kingdom.

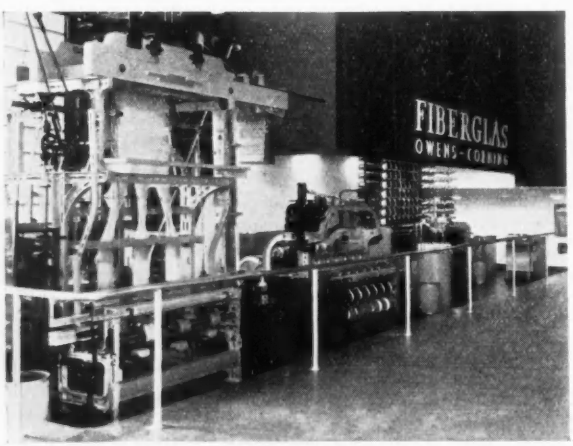
A second du Pont material featured is " Lucite," methyl methacrylate. A transparent substance with peculiar optical qualities, " Lucite " is one of the most versatile of the plastics. Its property of carrying light around bends (" edge lighting ") is especially desirable for decorative purposes, and the murals in the du Pont building make liberal use of " Lucite " as an artistic medium. Various applications of plastics are shown and a " diamond " almost a foot in diameter, cut in exact standards for brilliant gem cutting, is displayed.



The Budd exhibit showing rayon manufacture on stainless steel cylinders.

Visitors also see here a model pest control laboratory. Du Pont chemists estimate that insects, plant diseases and weeds cost farmers and the public more than 6 thousand million dollars annually. The pest control laboratory is a replica of parts of the du Pont laboratory at Wilmington, Delaware. A complete pottery unit is also an interesting exhibit and has been installed to demonstrate new ceramic colours. This development has now reached the point where fine china and glassware may be made inexpensively by mass production. Demonstrators show modern methods of applying colour by " spraying " the surface, a method whereby several costly steps in manufacture have been eliminated. In the new colours, brilliance, wide variations of shades and permanence have been achieved. Du Pont now obtain more than 10,000 colours and they claim that they can produce 700 new shades annually. Coloured glass, too, is entering a new era. The lustres are transparent and are applied to clear crystal, then fired on. The finished work resembles glass made by the older " batch " process, in which separate tanks of molten glass for each colour had to be maintained.

One interesting exhibit is an acetate rayon spinning machine, the first time such a mechanism has been displayed in action outside a factory. Steps in the manufacture of Neoprene synthetic rubber are also exhibited. A miniature rubber mill kneads the spongy mass which is then moulded and pressed



Winding machines and looms for glass cloth manufacture.

into flexible rings. The crude Neoprene as it is delivered to the rubber manufacturer is shown together with the compounding ingredients used with this material to make finished products with the elasticity, resilience, strength and abrasion resistance of the corresponding natural rubber products.

Among other exhibits is a model Cellophane plant and candy wrapping machine, waterproof bookbindings made of Fabricoid, a paint laboratory where the testing devices which gauge properties of paints and varnishes are in action, a dyestuffs laboratory which traces the development of the colours derived from coal tar, and a glass model of a coal separation plant showing how coal will float in a certain solution, while worthless shale sinks. A solution three times heavier than water is used. This is the first public appearance of the "sink and float" process which is said to be the most economical of the separating processes employed.

The BUDD WORKS, manufacturers of stainless steel, have a small exhibit showing the manufacture of artificial silk on a stainless steel machine. A solution of cellulose in cuprammorium hydroxide is forced through spinerets on to revolving stainless steel cylinders. Over these cylinders are pipettes washing the gradually forming thread on the cylinders with sulphuric acid and distilled water.

In the Glass Centre there is a complete plant for the manufacture of glass fibre. Filaments of glass are drawn down from an electric furnace to the looming and weaving machines on a lower level of the exhibit. Here is a Jacquard loom for making wide tape and a smaller loom for making narrower insulating tape. There is also a twister machine and a pickup machine which catches and winds the fine filament of glass as it is drawn down from the furnace. In the same exhibit there is a fractionating column of the bubble plate type. This is used in industry for the scrubbing or cleansing of gas mixtures to recover a valuable constituent, or to remove an unwanted constituent, and for the separation of mixtures of liquids into pure components or fractions. For gas scrubbing the gas enters at the bottom of the column and is bubbled through the liquid on each plate in series. The liquid is circulated by a glass centrifugal pump from the top to the bottom of the column against the rising gases. In so doing, the constituent to be removed from the gas is dissolved in the liquid and the scrubbed gas then emerges from the top of the tower to be liquefied by cooling in the condenser.

Finally, it would be impossible to overlook the FIRESTONE exhibit which is certainly one of the very best at the Fair. Here the visitor may see a tyre being made every four minutes; attendants operating chromium finished machines of modern design in a spacious hall explain every operation from crude rubber preparation to the finished tyre. There is a Production Hall showing one thousand different articles made from rubber.

DAMAGES AWARDED FOR HAIR DYE INJURY

Mrs. Louisa Arthur Cayton, of Southend, was awarded £150 damages and £18 17s. 10d. special damages at Southend County Court last week against Barnett Goodman, a Southend hairdresser, for personal injuries sustained when she contracted dermatitis after having her hair dyed. She also claimed damages from C. Nestle and Co., Ltd., of Holloway-road, London, distributors of the dye, and Golden, Ltd., the manufacturers, but judgment was given in their favour with costs.

Mrs. Cayton said she asked Goodman to touch up her hair and he assured her the dye he used was perfectly harmless. She contracted dermatitis immediately afterwards. Goodman's case was that the dye was represented to him as being perfectly harmless and no test was necessary when it was applied. It was because he was assured that the dye was so safe that he used it on Mrs. Cayton.

He also stated that no instructions were given to the effect that a test was needed, but Judge David Davies found that instructions were supplied with the dye and Goodman had disregarded them.

Action of Raney Nickel on Alcohols

Dehydrogenation Obtained at Low Temperatures

IN a recent communication to the Academy of Sciences, Paris, Raymond Paul referred to the interesting fact which he had previously noted—that Raney nickel dehydrogenates alcohols at a temperature much below that of reduced nickel (*Bull. Soc. Chim.*, 1938, *5*, 1,592)—and presented further results.

In some cases indeed this effect can be observed at ordinary room temperature, with consequent formation of aldehyde or ketone. The following table gives some of the results obtained:—

Alcohol	Temp. of test	Reduction to aldehyde or ketone
Propanol-2 ..	78°C.	16%
Butanol-2	90	61
Octanol-2 ..	120	80
Furfuryl	150	19
Cinnamyl	105	14
Geranol	120	15
Pentene-4-ol-1 ..	102	12
,, -1-ol-3 ..	105	48
Hexene-2-ol-4 ..	100	51

In the case of the primary alcohols the yield of aldehyde does not properly indicate the extent of dehydrogenation. All the alcohol does not take part in the reaction owing to reduction of the hydroxyl group to methyl (CH_2OH to CH_3), as could be easily observed with furfuryl or cinnamyl alcohols. Also the aldehyde formed underwent further change: below 80° there might be a slight degree of condensation, and above that temperature the aldehyde split up.

With the secondary alcohols, as Palfray and Sabetay have pointed out, the reaction is more uniform: the ketones do not appear to change in the presence of Raney nickel, even at 180°. The question therefore arises—why does dehydrogenation cease before the whole of the alcohol has reacted? This can hardly be due to the presence of free hydrogen, for in the case of unsaturated alcohols this is almost wholly attached to the ethylenic bond; nor can it be a question of catalyst fatigue, for if, when the reaction seems finished, the ketone formed is removed the evolution of hydrogen recommences. If the mixture of alcohol and nickel is very slowly distilled there is almost complete dehydrogenation, that is to say, 80 to 95 per cent., with many of these alcohols.

The most rational hypothesis seems to be that the ketone or aldehyde formed attaches itself to the active centres of the catalyst, and thus reduces or inhibits its activity.

Several experiments support this hypothesis: if an ethylenic derivative is added to the mixture of Raney nickel and alcohol easy to dehydrogenate, the dehydrogenation is retarded; but if, instead of an ethylenic an acetylenic derivative be added the dehydrogenation is stopped entirely. The study of the selective action of Raney nickel, and its activity in reactions which proceed by migration of hydrogen atoms, is being continued.

A TEST FOR SACCHAROSE IN MILK

Cousin and Nguyon Van Dinh have suggested to the Service des Fraudes, Paris, an improved method of testing for small quantities of saccharose in milk. After a study of the various methods of test now employed, they came to the conclusion that greater accuracy was obtained by eliminating the casein from the milk before testing. The method proposed is to treat the milk with potassium ferrocyanide and zinc acetate by Carrez' method, then test the residue for saccharose by Bayer's method with ammonium molybdate in an acid medium, making the same test at the same time on a solution of pure lactose for purposes of comparison. This gives a very sensitive test. There are some cases, however, where a very faint blue colouration is produced, and there seems some doubt as to whether saccharose is present or not. Here, Selivanoff's resorcinol test can be tried as a check.

GLASS RESEARCH

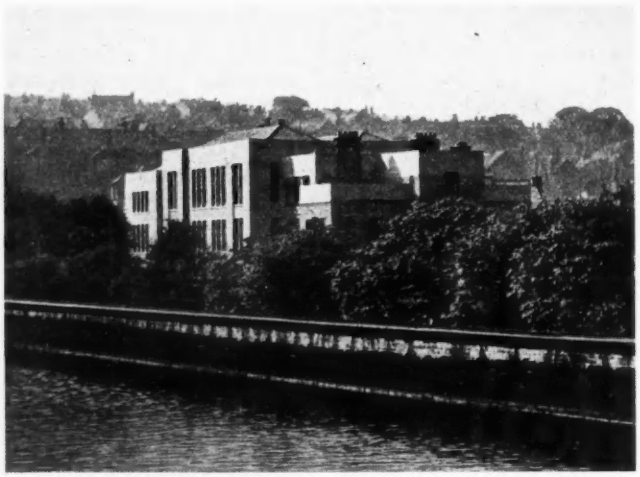
New Buildings at Sheffield University opened by Lord Riverdale

LORD RIVERDALE, chairman of the Advisory Council for Scientific and Industrial Research, opened new buildings of the Department of Glass Technology at Sheffield University on Monday.

At a luncheon which preceded the opening ceremony Lord Riverdale, in proposing the toast of the Glass Delegacy, the body which controls the department, spoke of the infinite value of the advice given by the Sheffield department to its supporters. The department, he said, began as a local project, but had now a national and even an international character.

Mr. Stanley Bagley, chairman of the Glass Delegacy, described the new buildings as a worthy monument to the glass industry and a tribute to the great work of Professor W. E. S. Turner, head of the department since its establishment nearly 25 years ago.

The new buildings occupy a site of two and three-quarter acres and have a large stone-built house on the site for nucleus. The new parts of the front of the building are referred to as Sections A and B and are separated by a second and new entrance hall at the north end. The old house, with its own entrance hall, together with sections A and B, make up the complete front of the building, which has a mean depth of 50 ft. and a length of 151 ft. 6 in. The L-shaped section linked to the north end of the main building is known as section C.



The new buildings of the Department of Glass Technology of Sheffield University which were opened on Monday.

The entrance hall to the old house is being decorated as a tribute to the generosity of the donors who have made possible the new buildings. It contains a pair of stained glass windows by Mr. Stanley M. Scott, of Sunderland and Newcastle-on-Tyne, depicting glass-making craftsmen at work. A large tablet, with pictorial illustrations of great achievements by English glassmakers during three centuries, and bearing the names of the donors to the Glass Delegacy's Fund, is to be executed by Mr. Scott on a special type of glass tile and erected in the hall. The porch which gives admission to the hall has a glass tablet with inscription to commemorate the opening of the new buildings, and a glass casket containing historic records in a glass-sided chamber or niche in the wall, the casket being designed and given by Pilkington Bros., Ltd. On the ground floor leading off the hall are the conference room, provided by a gift of Major W. F. Dixon-Nuttall, of Huyton, in memory of his father, Mr. F. R. Dixon-Nuttall, a prominent St. Helens glass manufacturer in his day; the visitors' room, provided by Mr. Stanley B. Bagley, of Knottingley, in memory of his father, Mr. William Bagley, founder of the Yorkshire Glass Bottle Manufacturers' Association; and the Professor's room, furnished from a fund specially raised by a committee of staff and students, past and present.

On the first floor of the old house, leading from the landing, are the Frank Wood library, opened in 1937; a librarian's room, records room and ladies' rest rooms. Oak panelling is a feature of the landing and of the Wood library. The latter contains a stained glass window by Mr. James Hogan, R.D.I., in memory of Mr. Frank Wood, with his portrait as central feature and below it various scenes referring to optical, scientific and other types of glass with which his name was associated. The second floor of the old house has various storerooms and a classroom, and its basement has numerous storerooms.

The new entrance hall between sections A and B is very modern in style, and the free use of glass creates an atmosphere of cleanness if also of austerity. The metal and glass panel balustrade is provided with edge illumination. This balustrade, continued up two flights, with the accompaniment, on the lower flight, of wall mirrors serving apparently to double the width of the stairs, and the outer wall panels of glass bricks, constitute a design provided by Mr. Kenneth Cheesman, architect to Pilkington Bros., Ltd.

The ground floor of section A has a central corridor flanked by the general office, a refectory and kitchen, and a series of laboratories devoted to researches on different groups of physical properties of glasses, including laboratories for the study of optical, radiation and X-ray, mechanical and thermal properties; a dark room, drawing office and mechanics shop are also nearby.

The same floor in section B, on the other side of the new entrance hall, contains students' cloakrooms, a general physical and a high temperature laboratory and storeroom for apparatus and materials.

The whole of the first floor of Section A is occupied by a museum and three rooms leading off it on the east side. The museum is 60 ft. long and 31 ft. wide, with oak plywood panelling and an attractive "broad reeded" obscuring glass in the partitions and doors of the side rooms. The window to be erected between the museum and the old stairway is the gift of Robinson, King and Co., Ltd., to the memory of Mr. John H. Lovell, their late chairman. It is entitled "Glass-making through the Centuries" and depicts six scenes chosen by Professor Turner from historical records and worked up by Mr. John Riedel. The largest of the small rooms is in process of equipment as a decorative processes laboratory, including glass-cutting, engraving, etc. The other rooms serve as a small lecture room and a museum keeper's store.

Outside the museum is the landing and entrance, in Section B, to the lecture theatre, which will seat approximately one hundred persons. It is equipped with a projection gallery and other modern conveniences.

On the second floor are the laboratories intended for teaching and research associated with the chemistry of glass. There are two main laboratories, spacious and light, one mainly for teaching, the other for research, and two other small laboratories are being equipped for special branches of research, particularly at the present time for fundamental studies on silicates, gas analysis and the chemical durability of glass. An office and various storerooms complete the equipment of this floor.

Section C is devoted to experimental glass melting and its attendant and auxiliary processes. So far only approximately one-half of Section C has been erected. The completed portion has a length of 75 ft. and width of 40 ft. It comprises three rooms; the smallest is intended ultimately as a lamp-working, or bench glass-blowing room, but at present must serve as the raw material store and mixing room for the glass-making materials. There are two other large rooms,

Chemical research laboratory.

each 50 by 30 ft. internally. That on the ground floor is devoted to the storage and preparation of the various special refractory materials required for glass-making, and two laboratories occupying part of this floor are intended for testing work on these materials.

The upper room, constitutes the experimental glass-melting room. It is equipped with a variety of furnaces, gas-heated or electrically-heated, and facilities are provided for research on a number of problems of furnace design and construction, in addition to glass-melting operations. Two large rectangular openings have been left in the floor so that regenerator or recuperator structures can be built below the floor if need be, and an adjustable platform, on stanchions in the ground floor, has been specially designed so that on it furnaces with any considerable understructure of various design can be erected without necessarily encroaching unduly on the ground floor.

The aim throughout the interior has been to create the impression of lightness and spaciousness, and for this reason partitions with plate glass windows of large area have been freely employed, while the glass dome above the new stairway greatly improves its lighting. Glass in varied modern forms has been incorporated effectively wherever possible. Vitrolite, in various attractive colourings, has been employed in the ladies' rooms, the staff lavatory and the kitchen. Glass building blocks have been used in certain sections where direct lighting is either poor or absent. Thermolux glass has been employed in the partitions for the refectory, kitchen and general office windows fronting the ground floor corridor, and in an office on the second floor. Armourplate glass has been used for shelves on the laboratory benches, in the kitchen hood, and in the set of glass panels fitted to the first section of the staircase balustrade. Glass silk has been employed for heat insulation of the boiler and feed pipes.

At a Degree Congregation which followed the opening ceremony, the Honorary Degree of Doctor of Laws was conferred on Mr. Stanley Bagley and the Honorary Degree of Doctor of Philosophy was conferred on Mr. Bernard P. Dudding, a past president of the Society of Glass Technology.

Tablets commemorating the opening of the buildings and thanking the donors of the building fund were unveiled by Mr. Geoffrey Pilkington, of the firm of Pilkington Bros. of St. Helens and Doncaster, and Dr. J. C. Peddle, president of the Society of Glass Technology, respectively.

"Our Largest Foreign Market"

Booklet Points out British Firms are Favoured by Argentine's Import Regulations

IMPORT regulations are seldom thought of as helpful, but in the case of the Argentine the latest regulations definitely favour British firms at the expense of foreign competitors. In the first quarter of 1939, Argentine purchases of British goods totalled £6,650,000, an increase of 38 per cent. over the corresponding period last year. In a booklet entitled "Our Largest Foreign Market," just published by *Industria Britanica*, it is pointed out that the Anglo-Argentine trade agreement has been reinforced by regulations designed to adjust the trade balance still further.

Briefly, the list of countries which can secure official exchange for their imports into the River Plate is curtailed; they can deal only in free exchange which is several pesos dearer, and consequently there is a new opportunity for British firms to get business hitherto done by such countries. For example, 29.3 per cent. of the textile imports previously supplied by Italy and Japan are subject to the new regulations. About 9 per cent. of the iron and steel manufactures hitherto supplied by the United States are in the same category, while in the market for non-ferrous metals and manufactures (of which British firms already supply 37.4 per cent.) another 20 per cent. should now present possibilities. In the chemical and pharmaceutical field 37.2 per cent. of the trade was obtained by countries who will now be able to operate only on the free exchange market so that there are new opportunities for British firms. Further details are given in the booklet which may be obtained free of charge from Benn Brothers, Ltd., Bouverie House, Fleet Street, E.C.4.

British Glycerine Manufacturers, Limited

Assistant Official Receiver on Company's Failure

THE first meetings of creditors and shareholders of British Glycerine Manufacturers, Ltd., St. James's Place, S.W., were held at the Board of Trade offices.

Mr. Joseph Cowen, Assistant Official Receiver, said that the company was incorporated in October, 1936, primarily to acquire a secret process for the manufacture of glycerine from a Mr. August Rasse for £125,000 in cash. Early in 1937 it was discovered that the Rasse process was non-existent or worthless, and proceedings were begun to recover the £125,000. About August, 1937, it was decided to manufacture glycerine by a process of Dr. Egon Boehm's. He was to receive a salary of £275 per month for 12 years, free of tax, and £3 a day expenses. Negotiations were begun for the purchase of a factory at Gravesend. As the company had no capital, the property was purchased by Baron Brugmann de Walzin, and the company agreed to purchase it from him for £40,000.

In May, 1938, Mr. Charles Paquet, a director of the company, was refused admission by Home Office officials on arrival at Croydon from Brussels. This apparently brought plans to a standstill, and arrangements for the Gravesend factory were cancelled.

The statement of affairs disclosed gross liabilities of £19,733, but other claims were notified amounting to £57,350. The only assets were a quantity of pictures at St. James's Place, valued at £5. The failure of the company was attributed to inability to obtain the necessary capital in consequence of the refusal of the authorities to allow Paquet to return.

British Overseas Chemical Trade in May

ACCORDING to the Board of Trade returns for the month ended May 31, 1939, imports of chemicals, drugs, dyes and colours were valued at £1,693,594, an increase of £767,184 as compared with May, 1938. Exports were valued at £2,384,440, an increase of £493,173. Re-exports were valued at £42,800.

Imports

	Quantities. May, 31, 1938.	Quantities. May, 31, 1939.	Value. May, 31, 1938. £	Value. May, 31, 1939. £
Acids—				
Acetic .. .. cwt.	8,251	12,488	9,948	15,352
Boric (boracic) .. ,,	2,925	8,400	3,091	8,923
Citric .. .. ,,	2,770	1,770	11,273	7,246
Tartaric .. ,,	2,842	3,544	12,709	16,604
All other sorts .. value	—	—	6,781	9,185
Borax .. .. cwt.	24,037	49,100	13,483	31,772
Calcium carbide .. ,,	134,465	145,026	63,346	68,219
Fertilisers, manufactured tons	1,075	3,869	5,142	12,469
Potassium compounds—				
Caustic and lyes cwt.	5,996	16,864	6,856	18,568
Chloride (muriate) ,,	24,000	288,723	7,807	99,554
Kainite and other potassium fertiliser salts cwt.	27,479	283,923	3,440	69,561
Nitrate (saltpetre) ,,	3,112	14,093	2,871	11,785
Sulphate .. ,,	13,820	148,400	6,547	68,448
All other compounds ,,	9,801	15,203	13,636	17,320
Sodium compounds—				
Chlorate .. ,,	2,276	7,374	2,616	8,363
Chromate and bichromate .. .. cwt.	934	1,505	1,150	2,015
Cyanide .. ,,	4,106	119	9,449	343
Nitrate .. .. ,,	30,381	87,986	7,481	22,129
All other compounds ,,	15,391	26,821	15,296	18,475
Chemical manufactures, etc., all other sorts value	—	—	316,283	527,164
Drugs, medicines and medicinal preparations—				
Manufactured or prepared—				
Quinine and quinine salts .. .. oz.	123,687	219,180	10,002	19,796
Medicinal oils .. cwt.	3,652	3,264	9,527	7,804
Proprietary medicines value	—	—	52,107	64,953
All other sorts .. ,,	—	—	37,995	56,027
Finished dye-stuffs obtained from coal tar cwt.	3,213	5,223	105,654	167,624
Extracts for dyeing ,,	2,518	4,251	3,877	9,183
Extracts for tanning—				
Chestnut .. ,,	27,893	41,715	19,836	29,954
Quebracho .. ,,	4,903	49,597	4,626	45,419
All other sorts .. ,,	23,371	51,249	18,543	43,426
All other dyes and dyestuffs .. .. cwt.	289	1,129	7,476	33,091
Painters' and printers' colours and materials—				
White lead (basic carbonate) .. cwt.	5,180	6,484	7,251	8,679
Ochres and earth colours cwt.	44,836	41,898	14,013	13,763
Bronze powders and other metallic pigments .. cwt.	1,641	1,722	11,766	13,850
Carbon blacks .. ,,	39,279	54,252	50,997	75,307
Other pigments and extenders, dry .. cwt.	43,843	73,390	10,617	17,532
Lithopone .. ,,	24,747	27,348	14,493	16,746
All other descriptions ,,	14,779	19,189	28,425	36,945
Total .. .. value	—	—	926,410	1,693,594

Exports

	Quantities. May, 31, 1938.	Quantities. May, 31, 1939.	Value. May, 31, 1938. £	Value. May, 31, 1939. £
Acids—				
Citric .. .. cwt.	2,024	2,843	9,597	12,887
All other sorts .. value	—	—	19,677	35,390
Aluminium compounds tons	2,232	2,553	27,716	20,613
Ammonium compounds—				
Sulphate .. tons	40,966	36,276	276,779	241,481
All other sorts .. ,,	1,460	1,887	21,369	23,775
Bleaching materials—				
Bleaching powder (chloride of lime) .. cwt.	50,473	48,917	13,472	14,899
All other sorts .. ,,	3,824	8,656	10,803	21,994
Coal tar products—				
Cresylic acid .. galls.	154,638	230,268	24,499	31,362
Tar oil, creosote oil ,,	3,373,483	1,849,301	79,003	39,330
All other sorts .. value	—	—	13,854	15,568
Copper, sulphate of tons	2,102	3,529	36,098	55,547
Disinfectants, insecticides, etc. .. .. cwt.	25,415	41,084	58,165	86,292
Fertilisers, manufactured tons	11,483	11,367	51,980	63,277
Glycerine .. .. cwt.	5,859	7,316	21,052	16,541
Lead compounds .. ,,	13,757	16,410	19,176	24,126
Magnesium compounds tons	319	560	8,564	14,352
Potassium compounds cwt.	4,446	5,777	10,248	20,277
Salt (sodium chloride) tons	22,041	23,408	60,861	62,941
Sodium compounds—				
Carbonate, including soda crystals, soda ash and bicarbonate cwt.	411,130	475,814	82,321	111,840
Caustic .. .. ,,	126,966	231,694	66,862	123,484
Silicate (water glass) ,,	20,182	28,307	6,489	8,734
Sulphate, including salt cake .. .. cwt.	55,962	115,815	6,977	13,452
All other sorts .. ,,	35,689	63,480	59,404	100,217
Zinc oxide .. .. tons	1,223	1,585	22,883	27,260
Chemical manufactures and products .. value	—	—	17,578	22,943
Drugs, medicines and medicinal preparations value	—	—	14,618	15,989
Dyes and dye-stuffs and extracts for dyeing and tanning .. .. cwt.	246	511	983	1,080
Painters' and printers' colours and materials cwt.	1,081	671	3,412	2,788
Total .. .. value	—	—	36,591	42,800
All other descriptions value	—	—	203,843	278,353
Drugs, medicines and medicinal preparations—				
Quinine and quinine salts .. oz.	130,916	158,873	13,463	18,940
Proprietary medicines value	—	—	106,107	152,241
All other descriptions ,,	—	—	148,663	176,103
Dyes and dye-stuffs and extracts for dyeing and tanning—				
Finished dye-stuffs obtained from coal tar—				
Alizarine, alizarine red and indigo (synthetic) cwt.	521	736	6,729	6,103
Other sorts .. ,,	5,882	9,098	82,292	132,117
Extracts for tanning ,,	15,247	18,187	14,714	16,366
All other descriptions cwt.	1,567	2,378	8,822	15,196
Painters' and printers' colours and materials—				
Ochres and earth colours cwt.	13,506	13,568	12,841	11,859
Other descriptions ,,	9,608	16,421	31,985	43,432
White lead .. ,,	8,344	6,838	17,208	13,219
Ships' bottom compositions .. .. cwt.	2,760	3,537	9,526	12,711
Lithopone .. ,,	8,254	34,094	6,197	25,114
Paints and painters' enamels .. cwt.	35,954	43,046	99,494	126,786
Varnish and lacquer (clear) .. gall.	75,361	79,240	29,863	32,730
Printers' ink .. cwt.	3,719	5,407	20,375	27,382
All other descriptions cwt.	39,202	57,387	71,296	110,149
Total .. .. value	—	—	1,891,267	2,384,440

Re-Exports

PERSONAL NOTES

DR. W. B. ORR has been appointed lecturer (Grade A) to the Department of Chemistry at Hull University.

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SIR HERBERT WALKER has been appointed to the board of W. B. Dick & Co., Ltd., makers of lubricating oils, and W. B. Dick & Co. (Holdings) Ltd.

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PROFESSOR R. P. LINSTEAD has resigned from the Chair of Chemistry at Sheffield University on his appointment to the Chair of Organic Chemistry at Harvard University.

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COLONIAL SERVICE.—MR. F. E. REID has been appointed chemist to the Institute of Medical Research, Federated Malay States, and MR. W. RINTOUL has been appointed assistant analyst in the Straits Settlements.

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MR. J. G. PEARCE, director of the British Cast Iron Research Association, was presented with the Oliver Stubbs Medal, awarded annually for distinguished services to the Institute of British Foundrymen, at the International Foundry Congress in London on Tuesday. The E. J. Fox Medal, for distinguished foundry practice and science and distinguished metallurgy, was awarded to DR. H. A. SCHWARTZ, of Cleveland, Ohio.

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MR. L. R. ROBERTS, M.B.E., M.I.Pet.Tech., general manager of the Dee Oil Co., Ltd., Liverpool, has been appointed managing director of the company. Prior to his service with the Dee Oil Co., Mr. Roberts had considerable refining experience with the Anglo-Iranian Oil Co. and marketing experience with the Texas Oil Co. He also spent some years in oil refining in Mexico. Following active service in France with the Special Brigade of Royal Engineers, he was recalled to this country to hold the position of chemist-in-charge in connection with the manufacture of high explosives and mustard gas.

Mr. L. R. Roberts.

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PROFESSOR JAMES WILFRED COOK, D.Sc., Ph.D., F.I.C., Professor of Chemistry at London University, has been appointed Regius Professor of Chemistry at Glasgow University in place of the late Professor George Barger. Professor Cook was lecturer in organic chemistry at the Sir John Cass Technical Institute, London, from 1920 to 1928, chemist at the chemical research laboratory of the Department of Scientific and Industrial Research from 1928 to 1929, and since then has held the post of research chemist at the Research Institute of the Royal Cancer Hospital. He was appointed reader in pathological chemistry at London University in 1932 and Professor of chemistry in 1935. In 1936 he was awarded, jointly with Professor E. J. Kennaway, the prize of the Union Internationale Contre le Cancer for cancer research, and was invested in 1937 with the insignia of "Officier de l'Ordre de Leopold" conferred upon him by the King of the Belgians.

Mr. J. N. Bennett, Ph.C., who has recently been appointed head laboratory chemist to Hirst, Brooke and Hirst, Ltd., manufacturing chemists, Leeds.

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OBITUARY

MR. J. B. ATKINSON, secretary and advertising manager of the Society of Dyers and Colourists, died on June 10 at the age of 63. Mr. Atkinson, who was trained in the dyeing trade, became secretary of the Society on a part-time basis in 1902. He was appointed full-time secretary and advertising manager in 1907.

SIR ERNEST W. TATE, a former president of Tate and Lyle, Ltd., sugar refiners, has left estate valued at £1,467,735 (net personalty £1,226,703).

Recent Trade Literature

THE BENJAMIN ELECTRIC, LTD., have published another edition of their magazine *The Reflector* (*39*, No. 2). It is notable for a number of excellent illustrations of Benjamin lighting installations in factories, workshops, schoolrooms, laboratories, wharves, etc. Saaflux Glassteel diffusers, porcelain well glass parabolic angle reflectors, Duoflex reflectors and elliptical angle reflectors are among the types of lighting shown The new laboratories of Phosferine (Ashton and Parsons), Ltd., which are equipped with a Benjamin lighting installation are among those illustrated.

Developments in kitchen planning and canteen equipment which have helped to make possible enormous improvements in mealtime service are described in "Large Scale Kitchens, Office Dining Clubs and Works Canteens," a new illustrated publication issued by the BRITISH COMMERCIAL GAS ASSOCIATION. Another new publication of the Association, "This Made a New World" tells the story of the British Gas Industry. This booklet shows the remarkable expansion from a century ago to the present time, when the industry supplies more than 11,700 customers and accounts for more than one-tenth of all the coal used in the country.

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Stannous chloride as quantitative reagent for selenium and tellurium. Schoeller, *Analyst, 64,* 318-323.

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Analysis for lead in carbon steel. Pavlish, Sullivan and Shea, *Metals and Alloys, 100,* 150-151.

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Miscellaneous

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General News——From Week to Week

THE SIXTH ANNUAL CONFERENCE of the Institute of Vitreous Enamellers is to be held at the Grand Hotel, Birmingham, from September 22 to 24.

THE SECOND EDITION of *Casein and its Industrial Applications*, published by Chapman and Hall, Ltd., which was reviewed in THE CHEMICAL AGE (May 20, p. 378), is priced at 32s. 6d. net and not 24s. as previously stated.

THE BRITISH ALUMINIUM CO., LTD., are transferring their branch office and aluminium warehouse from 25/29 Pancras Road N.W.1, as from July 1, 1939, to more spacious premises at Park Avenue, North Circular Road, N.W.10. (Tel.: Willesden 4817 and 4818.)

NO FURTHER OPPOSITION to the erection of a chemical factory near Morecambe and Heysham, will be made by the Corporation. This was decided at a private meeting of the Town Council when a report of a deputation which had interviewed Sir Kingsley Wood was received.

OWING TO SPECIAL CIRCUMSTANCES the Chemical Society's library will this year be closed in the evenings from July 3, instead of July 16. From July 3 to September 30 the library will therefore be open daily from 10 a.m. to 5 p.m., except during the fortnight, August 7 to 19 inclusive, when it will be entirely closed for revision and cleaning.

A FURTHER INDICATION of a continuation of the revival in trade is afforded by the figures for next year's British Industries Fair announced by the Department of Overseas Trade. One week after the issue of forms of application for space in the London Section of the Fair, the space applied for shows a marked increase over last year, 265,640 sq. ft., as against 236,308 sq. ft. a year ago.

DAMAGE to the extent of £50,000 was caused by fire at the factory of Kaputine Syndicate Co., Ltd., Thornton Street, Collyhurst, Manchester, last week. The works employed 200 people. Besides the general chemical section, the printing and box-making plant and several vehicles were destroyed. The cause of the fire is unknown, as apart from certain oils there was no highly inflammable material in stock.

MR. CHARLES RAMSDEN, Foreign Director of the Federation of British Industries, on his return this week from a visit to Sweden, reported on the progress made in Stockholm regarding the composition of the Swedish delegation which is to visit the United Kingdom at the beginning of July. The delegation will number between forty and fifty representatives, who will be in a position to discuss, among others, a variety of lines of goods in which it is hoped that Sweden may be able to increase her imports from the United Kingdom, including tin plate, china clay, chemicals, paints and varnishes and supplies for the paper and pulp industry.

THE BRITISH IRON AND STEEL FEDERATION announce that the output of steel ingots and castings in May amounted to the record total of 1,218,100 tons. This figure is 40,000 tons higher than the previous record total reached in November, 1937. Production of pig iron rose to 692,100 tons, against 762,300 tons in November, 1937. Thirteen additional blast-furnaces resumed operations during the month, bringing the total in blast to 113, against 135 at the end of November, 1937. Further stacks are being started up, including new plant now nearing completion. The production of pig iron in May included 123,100 tons of hematite, 447,600 tons of basic, 99,300 tons of foundry, and 13,200 tons of forge pig iron.

CHARLES TENNANT AND CO., LTD., chemical manufacturers, are to establish a works at the Scottish Industrial Estate at Hillington, Glasgow. One of the oldest commercial concerns in Scotland, the origin of this firm dates back to the latter half of the 18th century, being founded by Charles Tennant in 1797. Several years earlier Charles Tennant, who was then managing owner of a bleachfield at Darnley, Renfrewshire, discovered a method of producing bleaching powder. This invention had immediate and far-reaching effects, and some years later Charles Tennant started his chemical works at St. Rollox, Glasgow, thus laying the foundations of an enterprise which in the last 140 years has done much to spread the industrial fame of Scotland.

A REPORT has just been issued on experiments which have been carried out by the Hannah Dairy Research Institute, Ayr, into the value as a fertiliser of screened dust from household refuse. The experiments were carried out on behalf of Mr. W. B. Strain, Inspector of Cleansing, Ayr. The fertilising value of the dust is proved by these experiments, which have been made over a period of four years. It is claimed for the dust that it is an effective fertiliser on heavy, medium, or light soil. Mr. Strain states that in his opinion, screened dust should rank for subsidy under the Agricultural Act, 1937, to the same extent as basic slag. He is convinced that the dust has a definite place in agriculture.

NINETEEN REPRESENTATIVES OF LOCAL AUTHORITIES and other organisations co-operating with the Department of Scientific and Industrial Research in investigations into the nature and extent of atmospheric pollution met recently in half-yearly conference at the offices of the Department. Alderman Adams, M.P., J.P., of Newcastle, presided, and, at the close of the meeting was unanimously re-elected chairman of the conference for a third year. The conference learned with interest of measurements which had been made in Scunthorpe by Dr. W. H. Hartston (the Medical Officer of Health), on the amounts of zinc and lead in the matter deposited from the air. Other members of the conference who had had previous experience of measurements of zinc, lead and other metals in the atmospheres of steel-manufacturing and other towns, also took part in the discussion. Dr. G. M. B. Dobson, F.R.S. (chairman of the Atmospheric Pollution Research Committee) presented a report on the progress of the investigations carried out under the Committee. He told the conference that the special survey of atmospheric pollution in and around the city of Leicester had now entered upon its third year, during which special attention would be paid to certain problems which the previous work of the Survey had shown to be important. This had required the establishment of three new observing stations, for the measurement of dust in the air, near the city. Special work on these problems would also be carried on in the laboratory during the year.

Foreign News

A NEW GELATINE FACTORY using pigskin as raw material is under construction at Pulawy (Poland).

DAILY PRODUCTION OF ITALIAN TEXTILE CASEIN in 1938 was 8.3 tons, representing only 66 per cent. of the productive capacity.

BOLTON INDUSTRIAL DEVELOPMENT COMMITTEE have been approached by a Hungarian firm of bleachers with the object, it is understood, of starting a bleaching works in Bolton. It is reported, however, that the difficulty of getting capital out of Hungary is holding up the scheme.

OFFICIAL STATISTICS reveal that Germany's total output of cadmium during 1938 amounted to 432 metric tons. Cadmium is used chiefly in Germany for manufacturing metal bearings, and consumption for this purpose has increased considerably in recent years. On account of the scarcity of the metal in Germany and its relatively high cost, its use for the manufacture of pigments has been restricted.

REPORTS FROM GERMANY indicate that there is already evidence of the stimulus which the production of synthetic tanning materials recently received by a new decree, effective in February last, which provides for further increases in the compulsory use of the synthetic materials. The decree designates the precise types of synthetic tanning materials that may be used and the manner in which tanning materials must be marked to indicate their status as domestic or foreign products.

THE REPORT OF THE I. G. FARBENINDUSTRIE for 1938 (for financial results see *C.A.*, June 10, page 444) draws attention to the great progress achieved in the comparatively new fields of motor fuel and lubricants, synthetic rubber, textile fibres and light metals. New plants for the pulping of German beechwood have been put into successful operation as well as an entirely novel process for direct conversion of wet pulp into textile fibres. A large-scale plant for production of sulphuric acid and cement from gypsum has also been put into operation.

A FURTHER STEP in the industrialisation of Turkey has been taken by the decision to erect a glycerine factory at Gemlik.

INCREASED DEMAND FOR BARIUM CHLORIDE by the Japanese rayon and dyestuffs industries has induced a leading producing firm to double its output.

THE CHEMICAL DIVISION of the National Research Council of Canada are carrying out experiments on the utilising of selenium compounds as fuel anti-knock agents.

CONSIDERABLE RESERVES OF ROSE OILS (8,250 kilos) are now in the hands of the Bulgarian Agricultural Bank so that the government has decided to restrict the cultivation of the flower for a period.

NICOTINE SULPHATE MANUFACTURE will be undertaken in Korea by the newly-founded Dai-Nippon Nicotine Kogyo K.K. (capital 180,000 yen) which will utilise raw material from its own tobacco plantations.

THE REPORT FOR 1938 of the Compagnie de Produits Chimiques Alais, Froges et Camargue draws attention to the increase in aluminium sales both in France and abroad, notably to the aircraft, motor car and high tension cable industries.

EXPERIMENTS aiming at the production of whale oil from blubber without the aid of water or steam are now proceeding in Norway under government encouragement and their successful outcome will signify a tremendous simplification in processing technique.

A SUBSTITUTE FOR CARBON BLACK which has appeared on the Japanese market in consequence of the remarkable growth in demand and which is reported to be giving satisfaction is composed of 80-90 per cent. processed lignite and 20-10 per cent. gas black.

THE MONSANTO CHEMICAL CO. have acquired the Resinox Corporation, manufacturers of phenolic plastic moulding compounds, New York and Edgewater, New Jersey. This is the second major acquisition of the Monsanto Co. Last year the Fiberloid Corporation, Springfield, Mass., became the plastics division of the Monsanto Co.

OLIVE STONES are an important by-product of Greek agriculture and have been mainly utilised as fuel in the past. If a new proposal to use them in cellulose production is adopted, each ton of stones will, it is claimed, yield 750 lb. cellulose as well as by-products in the shape of 35 lb. methyl alcohol, 130 lb. calcium acetate and 150 lb. tar.

IT IS REPORTED that the Yugoslav Ministry of Commerce and Industry has authorised the formation of a company to be known as "Kalij A-D." with head offices in Belgrade, to engage in the importation and sale of fertilisers. It is stated that the project is backed by both German and French capital, the principal shareholders of the company being German and French potash syndicates.

ACCORDING TO A REPORT from the office of the American Commercial Attaché at Istanbul, the construction of a small nitrogen plant is proposed at Kutahya, Turkey. It is stated that the present plans for the nitrogen plant call for a production capacity of 3,200 tons of nitric acid annually and 200 tons of ammonium nitrate. A calcium carbide installation is also to be included in the Kutahya group and will have an annual production capacity of 2,000 tons.

IT IS REPORTED from Santiago that the Chilean Government is acquiring for £1,000,000 the oil distributing systems of foreign oil companies operating in Chile. The British Shell-Mex Co. and the American Standard Oil Co. are the firms chiefly affected. Chilean officials emphasise that the change-over would be a commercial transaction, and no expropriation would be involved. Profits from the proposed State monopoly would be utilised for oil explorations, especially in the Magellan territory.

PLANS FOR A LARGE DYE FACTORY in Belgium have been drawn up by chemical engineers familiar with the American aniline and sulphur dye processes, according to a report from the office of the American Commercial Attaché, Brussels. The grounds for the plant have been purchased and construction commenced, but it is believed improbable that the plant can get into production before the end of 1939. When completed it will form part of the organisation controlled by the Carbo-Chimique, Tertre, a company which has previously exported its aniline oils but, with the completion of the new factory, proposes using them locally. It is reported that as a beginning the new plant will only produce six aniline dyes.

ITALY'S two leading artificial silk manufacturers, the Snia Viscosa and the Cisa Viscosa have amalgamated, it is announced.

THE JUGOSLAVIAN STATE TOBACCO MONOPOLY has decided to erect a factory for the purpose of extracting nicotine from native-grown tobacco with a commencing annual throughput of 1,000 tons.

IT IS UNDERSTOOD that the Ceylon Coconut Board has requested Indian scientific authorities to investigate the possibilities of manufacturing glycerine from Ceylon coconut oil for munition purposes.

AN ITALIAN PROCESS for removing the cobalt from zinc ores is based upon treatment with an alkaline xanthate, precipitation of cobalt xanthate taking place in a mildly oxidising medium (L. Cambi, Ital. Pat. 369,051).

ARTIFICIAL WOOL FIBRE produced from the casein of goat's milk is being blended with natural wool to the extent of 20 per cent. in a mixed fabric now being turned out on the experimental scale at Kupava near Moscow.

CASTOR OIL has been converted into a drying oil with the desirable qualities of tung oil by heating alone or in solution with 5 to 8 per cent. of cobalt chloride at a temperature of 300° C. for one or two hours (P. Rizzi, Italian Pat. 356,438).

A NEW VARNISH RESIN obtained by esterifying rosin with pentaerythritol is described by Dr. T. Crebert in *Fette und Seifen*, of May, 1939. Unlike the glycerin ester it is not readily compatible with cellulose esters but finds chief application in oil varnishes where its higher melting point is an advantage. Another marked point of superiority of the pentaerythritol ester over the glycerin ester in oil varnishes is the greatly increased drying speed.

AN EXTENSIVE PROGRAMME of scientific work on the further development of the Soviet Far East is planned for this year by the Far-Eastern branch of the Academy of Sciences of the U.S.S.R. Under the third Fve-Year Plan, coal production in the Far East is to be practically trebled and exploration for oil will be carried on in the Cambrian formation in the inland section of the Far East. The Institute of Chemistry and the Institute of Mineral Fuels of Moscow will work on problems of extracting benzine from Sakhalin oil, and the possibility of obtaining liquid fuel from Verkhne-Snifunsk coal. Geological survey parties will cover the Selemij-Bureya and Sikhote-Alinsk districts with a view to establishing the extent of the big deposits of tin, lead, tungsten, zinc and other metals they are known to contain.

Chemical Trade Inquiries

The following trade inquiries are abstracted from the "Board of Trade Journal." Names and addresses may be obtained from the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1 (quote reference number).

India.—His Majesty's Trade Commissioner at Calcutta reports that the Indian Stores Department is calling for tenders (Tender Number M-4462—Rate Contract) for the supply and delivery of quantities of alumino ferric and sulphate of alumina required during the period November 1, 1939, to October 31, 1940. Tenders should be addressed to the Indian Stores Department, Miscellaneous Branch, Simla, India, by whom they will be received up to July 18, 1939. Sealed samples of not less than one pound each of the alumino ferric and sulphate of alumina offered, must be submitted to the Superintendent, Government Test House, Alipore, Calcutta, by June 23, 1939, unless samples of what is offered have recently been reported on by the Government Test House. (Ref. T. 23451/39.)

H.M. Trade Commissioner at Calcutta reports that the Indian Stores Department is calling for tenders (Tender No. M-4463) for the supply and delivery as and when required during the period November 1, 1939, to October 31, 1940, of quantities of sal-ammoniac in powder and in crystals. Tenders should be addressed to the Indian Stores Department, Miscellaneous Branch, Simla, where they will be received up to July 25, 1939. Tenderers are required to submit to the Superintendent, Government Test House, Alipore, not later than July 7, 1939, a sealed sample containing not less than 1 lb. of the material which they propose to offer. (Ref. T. 23445/39.)

H.M. Trade Commissioner at Calcutta reports that the Indian Stores Department is calling for tenders (Order No. M-4464) for the supply and delivery as and when required during the year ending October 31, 1940, of quantities of chloride of lime. Tenders should be addressed to the Chief Controller of Stores, Indian Stores Department, Miscellaneous Branch, Simla, by whom they will be received up to August 1, 1939. (Ref. T. 23434/39.)

Inventions in the Chemical Industry

The following information is prepared from the Official Patents Journal. Printed copies of Specifications accepted may be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, at 1s. each. The numbers given under "Applications for Patents" are for reference in all correspondence up to the acceptance of the Complete Specification.

Complete Specifications Open to Public Inspection

MANUFACTURE OF SODIUM BICHROMATE.—M. J. Udy. Nov. 30, 1937. 36142/37.

DETERGENT COMPOSITIONS.—Colgate-Palmolive-Peet Co. Nov. 30, 1937. 14843/38.

MANUFACTURE OF PHENOL SULPHIDES.—Standard Oil Development Co. Dec. 4, 1937. 25600/38.

MANUFACTURE OF POUR-POINT DEPRESSANTS.—Standard Oil Development Co. Dec. 3, 1937. 27531/38.

INSECTICIDAL COMPOSITION.—Dow Chemical Co. Dec. 2, 1937. 32893/38.

METHOD OF MAKING PLASTIC MATERIALS.—Kohle und Eisenforschung Ges., and Gelsenkirchener Bergwerks-A.-G. Dec. 1, 1937. 33701/38.

DE-SIZING AGENTS.—Kalle and Co., A.-G. Dec. 1, 1937. 33786/38.

PROCESSES FOR THE MANUFACTURE OF GRANULAR SUPERPHOSPHATE. Aktiebolaget Kemiska Patenter. Dec 1, 1937. 34630/38.

MANUFACTURE OF AZO-DYESTUFFS.—I. G. Farbenindustrie. Dec. 1, 1937. 34786/38.

RESINOUS COMPOSITIONS.—British Thomson-Houston Co., Ltd. Dec. 1, 1937. 34898/38.

MANUFACTURE OF CELLULOSE ESTERS.—I. G. Farbenindustrie. Dec. 1, 1937. 34943/38.

REMOVAL OF GAS from organic liquids.—Eastman Kodak Co. Dec. 1, 1937. 34949/38.

PRODUCTION OF CALCIUM SULPHATE.—E. I. du Pont de Nemours and Co. Dec. 2, 1937. 35059/38.

MANUFACTURE OF HIGH-MOLECULAR KETENES.—Deutsche Hydrierwerke, A.-G. Dec. 2, 1937. 35210/38.

PROCESS FOR RENDERING TEXTILES, paper, leather, furs and the like, water-repellent.—Deutsche Hydrierwerke, A.-G. Dec. 4, 1937. 35211/38.

MANUFACTURE AND PRODUCTION OF ARTIFICIAL RUBBER.—I. G. Farbenindustrie. Dec. 3, 1937. 35224/38.

PROCESSES FOR THE MANUFACTURE OF POLARISING MATERIALS.—International Polaroid Corporation. Dec. 4, 1937. 35427/38.

LUBRICANTS and their manufacture.—E. I. du Pont de Nemours and Co. Dec. 3, 1937. 35450/38; Dec. 3, 1937. 35451/38.

Specifications Accepted with Date of Application

PROCESS FOR THE MANUFACTURE OF ACYLATED ETHERS.—Rohm and Haas Co. April 8, 1937. (Sample furnished.) 506,301.

MANUFACTURE AND PRODUCTION OF GLYCERIDES suitable as edible oils and fats.—I. G. Farbenindustrie. April 6, 1937. 506,092.

MANUFACTURE OF DIPARADIAMINO-DIPHENYLSULPHONES.—A. Carpmael (I. G. Farbenindustrie.) Dec. 21, 1937. 506,227.

INSECTICIDES.—Rohm and Haas Co. July 23, 1937. 506,308.

PRODUCTION OF OXIDATION PRODUCTS of hydrocarbons of high molecular weight.—W. H. A. Thiemann (W. A. Faren-Holtz, G. Hubbe, and H. Hubbe (trading as Vereinigte Oelfabriken Hubbe and Farenholtz)). June 8, 1938. 506,104.

REFINING HYDROCARBON OILS.—H. E. Girling (Legal representative of H. D. Elkington (deceased)) (Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij). June 10, 1938. 506,228.

METHOD OF TREATING ELECTROLYTIC COATINGS on magnesium and its alloys.—R. W. Buzzard. July 1, 1937. 506,107.

GREASE AND OIL RESISTANT COATINGS.—Corn Products Refining Co. Aug. 12, 1937. 506,108.

METHODS OF PREPARING POLYMERIC AMIDES.—E. I. du Pont de Nemours and Co. Aug. 20, 1937. 506,125.

MANUFACTURE OF RESINOUS CONDENSATION PRODUCTS.—I. G. Farbenindustrie. Aug. 17, 1937. 506,368.

DOLOMITIC MAGNESIUM CARBONATE COMPOSITION and method of preparation.—D. H. Grundwald. Sept. 6, 1938. 506,134.

PREPARATION OF REDUCTION PRODUCTS of oestrone etherified with a benzyl or with a substituted benzyl group.—J. G. Fife (Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R. T. (Dr. Kereszty and Dr. Wolf)). Jan. 11, 1938. 506,252.

COLOURATION OF MATERIALS made of or containing cellulose derivatives.—H. Dreyfus. Oct. 19, 1937. 506,253.

SENSITISING DYES for silver halide emulsions.—H. Seabrook (O. Petutz Trockenplattenfabrick, Munchen, Ges.). Dec. 29, 1937. (Convention date not granted.) 506,423.

PROCESS FOR THE MANUFACTURE OF POLYMETHINE DYESTUFFS.—I. G. Farbenindustrie. May 9, 1936. 506,720.

FINISHING PROCESSES for textile materials.—Tootal Broadhurst Lee Co., Ltd., A. E. Battye, E. J. Candlin, J. Tankard, H. Corteen and F. C. Wood. Aug. 27, 1937. 506,721.

MANUFACTURE OF RUBBER-LIKE PRODUCTS.—Standard Oil Development Co. Dec. 11, 1936. 506,427.

MANUFACTURE OF CONDENSATION PRODUCTS.—A. Carpmael (I. G. Farbenindustrie.) Nov. 27, 1937. 506,507.

MANUFACTURE OF OXIDATION PRODUCTS from sterols or bile acids. Soc. of Chemical Industry in Basle. April 28, 1937. (Cognate Applications, 32909/37 and 32910/37.) 506,515.

DYEING AND COLOURING OF CELLULOSE ESTERS or ethers.—Soc. Rhodiaceta, and P. Audry. Nov. 29, 1937. 506,588.

ELECTROLYTIC MANUFACTURE and production of zinc dust.—G. W. Johnson (I. G. Farbenindustrie.) Nov. 29, 1937. 506,590.

ACETATE ARTIFICIAL-SILK DYESTUFFS.—W. W. Tatum, and Imperial Chemical Industries, Ltd. Nov. 29, 1937. 506,526.

MANUFACTURE OF INTERMEDIATES, sensitising dyes, and light-sensitised photographic emulsions.—I. G. Farbenindustrie. Jan. 25, 1937. 506,536.

DYEING OF TEXTILE MATERIALS comprising cellulose or its derivatives.—Courtaulds, Ltd., and E. E. Tallis. Nov. 30, 1937. 506,793.

Chemical and Allied Stocks and Shares

THE stock and share markets have shown a reactionary trend this week as sentiment has been governed by uncertainty as to international political affairs, despite the evidence of the better conditions developing at many trade centres. Selling pressure was not heavy, but in accordance with the surrounding tendency the majority of shares of companies in the chemical and allied trades have lost a further part of the improvement recorded in recent weeks.

* * * *

Imperial Chemical ordinary units, which were 31s. 9d. a week ago, have gone back to 30s. 4½d. and the preference units were 31s. 1½d. compared with 31s. 4½d. Borax Consolidated reacted from 23s. 9d. to 22s. 6d., while Lever and Unilever lost 9d. to 37s. and British Oil and Cake Mills preferred ordinary units declined from 43s. 3d. to 42s. Fison Packard were relatively steady and have held their recent improvement to 41s. 3d. British Match were 6d. better at 33s. 6d., while Swedish Match at 26s. were unchanged on balance. B. Laporte moved up sharply to 58s. 9d. and changed hands up to 59s. 4½d.

* * * *

Turner and Newall declined from 81s. to 78s. 9d. and British Oxygen from 81s. 3d. to 79s. 4½d., while Murex were 76s. 10½d. compared with 80s. a week ago. British Aluminium went back from 58s. 3d. to 57s. 6d. United Molasses showed a decline from 26s. to 24s. in sympathy with the general market trend, but Reckitt and Sons' ordinary units held last week's rise to 105s.

* * * *

British Plaster Board were firm and unchanged at 29s. aided by the excellent impression created by the results. On the other hand, cement shares were mostly lower, partly owing to reports that reduced cement prices may shortly be announced, although it is assumed that the latter may increase demand and that the industry is benefiting from the quota agreement recently put into operation. Associated Cement are 70s. 10½d. compared with 73s. 1½d. a week ago. Wall Paper Manufacturers deferred units declined from 27s. 3d. to 26s. 3d. and Pinchin Johnson were slightly lower at 24s. 9d. International Paint were well maintained at 81s. 3d. and Cellon at 15s. were also the same as a week ago. Michael Nairn were steady at 55s. 7½d. aided by expectations that the interim dividend will be unchanged, but Barry and Staines declined 6d. to 34s. 6d.

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Iron and steel securities were moderately lower, but Guest Keen, Whitehead Iron, Consett Iron and Stanton Ironworks became steadier on the belief that the forthcoming annual meetings may bear out the market view that earnings are showing an upward trend in the current year. Ruston and Hornsby at 30s. have retained their recent rise. Stewarts and Lloyds reacted to 45s. 4½d., while Tube Investments were lower at 87s. 9d. in sympathy with the general market trend this week.

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Elsewhere, Boots Drug went back from 42s. 9d. to 41s. 6d., while Beechams Pills deferred shares were steady at 8s. 9d. having remained under the influence of the statements at the meeting. Sangers have moved up from 20s. 9d. to 21s. 6d. following the maintenance of the dividend at 25 per cent. Timothy Whites were little changed at 23s. 1½d., while British Drug Houses remained at 21s. 3d. and British Glues at 4s. 9d. were also the same as a week ago. Monsanto Chemicals 5½ per cent. preference shares were unchanged at 21s. 10½d. Oil shares were reactionary owing to the large decline in the profits of the Anglo-Iranian company, whose dividend is being reduced from 25 per cent. to 20 per cent.

Weekly Prices of British Chemical Products

NEARLY all sections of the general chemical market present a steady appearance this week with trade more or less confined to those items normally enjoying a regular call. The flow of new business both for home and export is only of moderate dimensions but the volume of inquiry is certainly better than for the same period twelve months ago. Ex-contract deliveries are reported to be satisfactory with consumers taking up fairly substantial quantities. Values in all sections of the market remain steady there being no important changes in quotations to record. Business in coal tar products continues quiet and buying is extremely hesitant in character due to some extent to the uncertainty in the political situation.

MANCHESTER.—Although there seems to have been a renewal here and there of nervousness regarding the international situation business in chemical products on the Manchester market during the past week has been on satisfactory lines. The majority of users are fairly well booked over the next few months, and in consequence new business is no more than moderate. Deliveries against contracts, however, are on a fair scale, with the tendency in the case of textile chemicals towards improvement. Prices as a whole are on a steady basis. With regard to the by-products the light distillates are the most active, buying in other directions being slow. The tendency in the case of toluol is towards somewhat higher levels.

Price Changes

Rises: Chromic Oxide; Toluol, pure (Manchester); Copper Sulphate (Glasgow).

Falls: Cresylic Acid, pale, 99/100% (Manchester).

GLASGOW.—There has again been a good demand for general chemicals for industrial purposes for home trade during the week, and also rather more inquiry for export. Prices generally continue very steady on basis of the figures ruling during the last few weeks, with no important changes to report.

General Chemicals

ACETONE.—£39 to £43 per ton, according to quantity.

ACETIC ACID.—Tech., 80%, £30 5s. per ton; pure 80%, £32 5s.; tech., 40%, £15 12s. 6d. to £18 12s. 6d.; tech., 60%, £23 10s. to £25 10s. MANCHESTER: 80%, commercial, £30 5s.; tech., glacial, £42 to £46.

ALUM.—Loose lump, £8 7s. 6d. per ton d/d; GLASGOW: Ground, £10 7s. 6d. per ton; lump, £9 17s. 6d.

ALUMINIUM SULPHATE.—£7 5s. 0d. per ton d/d Lancs.

AMMONIA, ANHYDROUS.—Spot, 1s. to 1s. 1d. per lb. d/d in cylinders.

AMMONIUM CARBONATE.—£20 per ton d/d in 5 cwt. casks.

AMMONIUM CHLORIDE (see Salammoniac).—Firsts, lump, spot, £42 17s. 6d. per ton; d/d address in barrels. Dog-tooth crystals, £35 per ton; fine white crystals, £18 per ton, in casks, ex store. GLASGOW: Large crystals, in casks, £37 10s.

AMMONIUM DICHROMATE.—8¼d. per lb. d/d U.K.

ANTIMONY OXIDE.—£68 per ton.

ARSENIC.—Continental material £11 per ton c.i.f., U.K. ports; Cornish White, £12 5s. to £12 10s. per ton f.o.r., mines, according to quantity. MANCHESTER: White powdered Cornish, £15 10s. per ton, ex store.

BARIUM CHLORIDE.—£11 10s. to £12 10s. per ton in casks ex store. GLASGOW: £12 per ton.

BLEACHING POWDER.—Spot, 35/37%, £9 5s. per ton in casks, special terms for contract. GLASGOW: £9 5s. per ton net ex store.

BORAX COMMERCIAL.—Granulated, £16 per ton; crystal, £17; powdered, £17 10s.; extra finely powdered, £18 10s., packed in 1-cwt. bags, carriage paid home to buyers' premises within the United Kingdom in 1-ton lots. GLASGOW: Granulated, £16 per ton in 1-cwt. bags, carriage paid.

BORIC ACID.—Commercial granulated, £28 10s. per ton; crystal, £29 10s.; powdered, £30 10s.; extra finely powdered, £32 10s. in 1-cwt. bags, carriage paid home to buyers' premises within the United Kingdom in 1-ton lots. GLASGOW: Crystals, £29 10s.; powdered, £30 10s. 1-cwt. bags in 1-ton lots.

CALCIUM BISULPHITE.—£6 10s. per ton f.o.r. London.

CALCIUM CHLORIDE.—GLASGOW: 70/75% solid, £5 12s. 6d. per ton ex store.

CHARCOAL, LUMP.—£6 to £6 10s. per ton, ex wharf. Granulated, £7 to £9 per ton according to grade and locality.

CHLORINE, LIQUID.—£18 15s. per ton, seller's tank wagons, carriage paid to buyer's sidings; £19 5s. per ton, d/d in 16/17 cwt. drums (3-drum lots); £19 10s. per ton d/d in 10-cwt. drums (4-drum lots); 4⅜d. per lb. d/d station in single 70-lb. cylinders.

CHROMETAN.—Crystals, 2⅝d. per lb.; liquor, £13 per ton d/d station in drums.

CHROMIC ACID.—9d. per lb., less 2½%; d/d U.K.

CHROMIC OXIDE.—11½d. per lb.; d/d U.K.

CITRIC ACID.—1s. 0¼d. per lb. MANCHESTER: 1s. 0¼d. GLASGOW: B.P. crystals, 1s. 0¼d. per lb; less 5%, ex store.

COPPER SULPHATE.—£18 5s. per ton, less 2% in casks. MANCHESTER: £18 10s. per ton f.o.b. GLASGOW: £19 10s. per ton, less 5%, Liverpool in casks.

CREAM OF TARTAR.—100%, £4 12s. per cwt., less 2½%. GLASGOW: 99%, £4 12s. per cwt. in 5-cwt. casks.

FORMALDEHYDE.—£20-£22 per ton.

FORMIC ACID.—85%, in carboys, ton lots, £42 to £47 per ton.

GLYCERINE.—Chemically pure, double distilled, 1,260 s.g., in tins, £3 10s. to £4 10s. per cwt. according to quantity; in drums, £3 2s. 6d. to £3 16s. 0d. Refined pale straw industrial, 5s. per cwt. less than chemically pure.

HYDROCHLORIC ACID.—Spot, 5s. 6d. to 8s. carboy d/d according to purity, strength and locality.

IODINE.—Resublimed B.P., 6s. 9d. per lb. in 7 lb. lots.

LACTIC ACID.—(Not less than ton lots). Dark tech., 50% by vol., £24 10s. per ton; 50% by weight, £28 10s.; 80% by weight, £50; pale tech., 50% by vol., £28; 50% by weight, £33; 80% by weight, £55; edible, 50%, by vol., £41. One ton lots ex works, barrels free.

LEAD ACETATE.—LONDON: White, £31 10s. ton lots; brown, £35. MANCHESTER: White, £31; brown, £30. GLASGOW: White crystals, £29 10s.; brown, £1 per ton less.

LEAD NITRATE.—£32 per ton for 1-ton lots.

LEAD, RED.—£30 15s. 0d. 10 cwt to 1 ton, less 2½% carriage paid. GLASGOW: £30 per ton, less 2¼% carriage paid for 2-ton lots.

LITHARGE.—GLASGOW: Ground, £30 per ton, less 2½%, carriage paid for 2-ton lots.

MAGNESITE.—Calcined, in bags, ex works, about £8 per ton.

MAGNESIUM CHLORIDE.—Solid (ex wharf) £5 10s. per ton. GLASGOW: £7 5s. per ton.

MAGNESIUM SULPHATE.—Commercial, £5 10s. per ton, ex wharf.

MERCURY PRODUCTS.—Ammoniated B.P. (white precip.), lump, 6s. 5d. per lb.; powder B.P., 6s. 7d.; bichloride B.P. (corros. sub.), 5s. 8d.; powder B.P., 5s. 4d.; chloride B.P. (calomel), 6s. 5d.; red oxide cryst. (red precip.), 7s. 6d.; levig, 6s. 9d.; yellow oxide B.P. 6s. 10d.; persulphate white B.P.C., 6s. 7d.; sulphide black (hyd. sulph. cum. sulph. 50%), 6s. 6d. For quantities under 112 lb., 1d. extra; under 28 lb., 5d. extra.

METHYLATED SPIRIT.—61 O.P. industrial, 1s. 5d. to 2s. per gal.; pyridinised industrial, 1s. 7d. to 2s. 2d.; mineralised, 2s. 6d. to 3s. Spirit 64 O.P. is 1d. more in all cases and the range of prices is according to quantities.

NITRIC ACID.—Spot, £25 to £30 per ton according to strength, quantity and destination.

OXALIC ACID.—£48 15s. to £57 10s. per ton, according to packages and position. MANCHESTER: £49 to £55 per ton ex store. GLASGOW: £2 9s. per cwt. in casks.

PARAFFIN WAX.—GLASGOW: 3¾d. per lb.

POTASH, CAUSTIC.—Solid, £33 5s. to £38 per ton according to quantity, ex store; broken, £40 per ton. MANCHESTER: £38.

POTASSIUM CHLORATE.—£36 7s. 6d. per ton. MANCHESTER: £37 per ton. GLASGOW: 4¼d. per lb.

POTASSIUM DICHROMATE.—5¼d. per lb. carriage paid. GLASGOW: 5¼d. per lb., net, carriage paid.

POTASSIUM IODIDE.—B.P. 6s. 3d. per lb. in 7 lb. lots.

POTASSIUM NITRATE.—Small granular crystals, £24 to £27 per ton ex store, according to quantity.

POTASSIUM PERMANGANATE.—LONDON: 9¼d. to 10¼d. per lb. MANCHESTER: B.P. 9½d. to 11½d. GLASGOW: B.P. Crystals, 10½d.

POTASSIUM PRUSSIATE.—5¼d. to 6d. per lb. MANCHESTER: Yellow, 6d. to 6¼d.

PRUSSIATE OF POTASH CRYSTALS.—In casks, 6¾d. per lb. net, ex store.

SALT CAKE.—Unground, spot, £3 8s. 6d. per ton.

SODA ASH.—Light 98/100%, £5 17s. 6d. per ton f.o.r. in bags.

SODA, CAUSTIC.—Solid, 76/77° spot, £13 10s. per ton d/d station.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE.—£19-£20 per ton carriage paid North. GLASGOW: £18 10s. per ton net ex store.

SODIUM BICARBONATE.—Refined spot, £10 10s. per ton d/d station in bags in 1-ton lots. MANCHESTER: £10 15s. GLASGOW: £13 5s. per ton in 1 cwt. kegs, £11 5s. per ton in 2-cwt. bags.

SODIUM BISULPHITE POWDER.—60/62%, £12 10s. to £14 per ton d/d in 2-ton lots for home trade.

SODIUM CARBONATE MONOHYDRATE.—£20 per ton d/d in minimum ton lots in 2 cwt. free bags.
SODIUM CHLORATE.—£27 10s. to £32 per ton. GLASGOW: £1 11s. per cwt., minimum 3 cwt. lots.
SODIUM DICHROMATE.—Crystals cake and powder 4½d. per lb. net d/d U.K. with rebates for contracts. GLASGOW: 4¼d. per lb., carriage paid.
SODIUM CHROMATE.—4½d. per lb. d/d U.K.
SODIUM HYPOSULPHITE.—Pea crystals, £15 5s. per ton for 2-ton lots; commercial, £11 5s. per ton. MANCHESTER: Commercial, £11; photographic, £15 10s.
SODIUM METASILICATE.—£14 5s. per ton, d/d U.K. in cwt. bags.
SODIUM NITRATE.—Refined, £8 per ton for 6-ton lots d/d. GLASGOW: £1 12s. per cwt. in 1-cwt. kegs, net, ex store.
SODIUM NITRITE.—£18 5s. per ton for ton lots.
SODIUM PERBORATE.—10%, £4 per cwt. d/d in 1-cwt. drums.
SODIUM PHOSPHATE.—Di-sodium, £12 per ton delivered for ton lots. Tri-sodium, £16 10s. per ton delivered per ton lots.
SODIUM PRUSSIATE.—4d. per lb. for ton lots. MANCHESTER: 4¼d. to 5d. GLASGOW: 4d.
SODIUM SILICATE.—£8 2s. 6d. per ton.
SODIUM SULPHATE (GLAUBER SALTS).—£3 per ton d/d.
SODIUM SULPHATE (SALT CAKE).—Unground spot, £3 to £3 10s. per ton d/d station in bulk. MANCHESTER: £3 10s.
SODIUM SULPHIDE.—Solid 60/62%, Spot, £11 15s. per ton d/d in drums; crystals, 30/32%, £9 per ton d/d in casks. MANCHESTER: Concentrated solid, 60/62%, £11; commercial, £8 10s.
SODIUM SULPHITE.—Pea crystals, spot, £14 10s. per ton d/d station in kegs.
SULPHUR PRECIP.—B.P., £55 to £60 per ton according to quantity. Commercial, £50 to £55.
SULPHURIC ACID.—168° Tw., £4 11s. to £5 1s. per ton; 140° Tw., arsenic-free, £3 to £3 10s.; 140° Tw., arsenious, £2 10s.
TARTARIC ACID.— 1s. 1½d. per lb. less 5%, carriage paid for lots of 5 cwt. and upwards. MANCHESTER: 1s. 1¼d. per lb. GLASGOW: 1s. 1½d. per lb., 5%, ex store.
ZINC SULPHATE.—Tech., £11 10s. f.o.r., in 2-cwt. bags.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 7d. to 1s. 2d. per lb., according to quality. Crimson, 1s. 6d. to 1s. 7½d. per lb.
ARSENIC SULPHIDE.—Yellow, 1s. 5d. to 1s. 7d. per lb.
BARYTES.—£6 to £6 10s. per ton, according to quality.
CADMIUM SULPHIDE.—3s. 0d. to 3s. 3d. per lb.
CARBON BLACK.—3⅜d. to 4 1/16d. per lb., ex store.
CARBON DISULPHIDE.—£31 to £33 per ton, according to quantity, drums extra.
CARBON TETRACHLORIDE.—£41 to £46 per ton, according to quantity, drums extra.
CHROMIUM OXIDE.—Green, 11½d. per lb.
DIPHENYLGUANIDINE.—2s. 2d. per lb.
INDIA-RUBBER SUBSTITUTES.—White, 4¼d. to 5d. per lb.; dark 3⅜d. to 4⅜d. per lb.
LAMP BLACK.—£24 to £26 per ton del., according to quantity. Vegetable black, £35 per ton upwards.
LEAD HYPOSULPHITE.—9d. per lb.
LITHOPONE.—Spot, 30%, £16 10s. per ton, 2-ton lots d/d in bags.
SULPHUR.—£9 to £9 5s. per ton. SULPHUR PRECIP. B.P., £55 to £60 per ton. SULPHUR PRECIP. COMM., £50 to £55 per ton.
SULPHUR CHLORIDE.—5d. to 7d. per lb., according to quantity.
VERMILION.—Pale, or deep, 5s. per lb., 1-cwt. lots.
ZINC SULPHIDE.—£58 to £60 per ton in casks ex store, smaller quantities up to 1s. per lb.

Nitrogen Fertilisers

AMMONIUM SULPHATE.—The following prices have been announced for neutral quality basis 20.6% nitrogen, in 6-ton lots delivered farmer's nearest station up to June 30, 1939; November, £7 8s.; December, £7 9s. 6d.; January, 1939; £7 11s.; February, £7 12s. 6d.; March/June, £7 14s.
CALCIUM CYANAMIDE.—The following prices are for delivery in 5-ton lots, carriage paid to any railway station in Great Britain up to June 30, 1939; November, £7 12s. 6d.; December, £7 13s. 9d.; January, 1939, £7 15s.; February, £7 16s. 3d;. March, £7 17s. 6d.; April/June, £7 18s. 9d.
NITRO CHALK.—£7 10s. 6d. per ton up to June 30, 1939.
SODIUM NITRATE.—£8 per ton for delivery up to June 30, 1939.
CONCENTRATED COMPLETE FERTILISERS.—£11 4s. to £11 13s. per ton in 6-ton lots to farmer's nearest station.
AMMONIUM PHOSPHATE FERTILISERS.—£10 19s. 6d. to £14 16s. 6d. per ton in 6-ton lots to farmer's nearest station.

Coal Tar Products

BENZOL.—At works, crude, 9½d. to 10d. per gal.; standard motor, 1s. 3½d. to 1s. 4d.; 90%, 1s. 4½d. to 1s. 5d., pure 1s. 8½d. to 1s. 9d. MANCHESTER: Crude, 1s. per gal.; pure, 1s. 8d. to 1s. 8½d. per gal.
CARBOLIC ACID.—Crystals, 6⅝d. to 7⅛d. per lb., small quantities would be dearer; Crude, 60's, 1s. 6d. to 1s. 9d.; dehydrated, 2s. 6d. per gal., according to specification; Pale, 99/100%, per lb. f.o.b. in drums: crude, 2s. 1d. per gal.
CREOSOTE.—Home trade, 3¾d. to 4d. per gal., f.o.r., makers' works; exports 6d. to 6¼d. per gal., according to grade. MANCHESTER: 3¼d. to 4¾d.
CRESYLIC ACID.—97/99%, 1s. 4d. to 1s. 7d.; 99/100%, 1s. 9d. to 2s. 6d. per gal., according to specification. MANCHESTER: Pale, 99/100%, 1s. 6d.
NAPHTHA.—Solvent, 90/160, 1s. 6d. to 1s. 7d. per gal.; solvent, 95/160%, 1s. 7d. to 1s. 8d., naked at works; heavy 90/190%, 1s. 1½d. to 1s. 3d. per gal., naked at works, according to quantity. MANCHESTER: 90/160%, 1s. 5d. to 1s. 7d. per gal.
NAPHTHALENE.—Crude, whizzed or hot pressed, £4 10s. to £5 10s. per ton; purified crystals, £9 10s. per ton in 2-cwt. bags. LONDON: Fire lighter quality, £3 to £4 10s. per ton. MANCHESTER: Refined, £10 10s. to £12 per ton f.o.b.
PITCH.—Medium, soft, 26s. per ton, f.o.b. MANCHESTER: 26s. f.o.b., East Coast.
PYRIDINE.—90/140%, 12s. 6d. to 14s. per gal.; 90/160%, 10s. 6d. to 11s. 6d. per gal.; 90/180%, 3s. to 4s. per gal. f.o.b. MANCHESTER: 10s. 6d. to 14s. per gallon.
TOLUOL.—90%, 2s. 1d. to 2s. 2d. per gal.; pure 2s. 5d. to 2s. 6d. MANCHESTER: Pure, 2s. 5d. per gallon, naked.
XYLOL.—Commercial, 2s. 3d. per gal.; pure, 2s. 5d. MANCHESTER: 2s. 4d. per gallon.

Wood Distillation Products

CALCIUM ACETATE.—Brown, £6 15s. to £9 5s. per ton; grey, £8 to £8 5s. MANCHESTER: Brown, £8; grey, £9 10s.
METHYL ACETONE.—40.50%, £32 to £35 per ton.
WOOD CREOSOTE.—Unrefined, 6d. to 8d. per gal., according to boiling range.
WOOD NAPHTHA, MISCIBLE.— 2s. 8d. to 3s. per gal;. solvent, 3s. to 3s. 5d. per gal.
WOOD TAR.—£3 to £8 per ton, according to quality.

Intermediates and Dyes

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.
ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.
BENZIDINE, HCl.—2s. 7½d. per lb., 100% as base, in casks.
BENZOIC ACID, 1914 B.P. (ex toluol).— 1s. 11½d. per lb. d/d buyer's works.
m-CRESOL 98/100%.—1s. 8d. to 1s. 9d. per lb. in ton lots.
o-CRESOL 30/31° C.—6½d. to 7½d. per lb. in 1-ton lots.
p-CRESOL 34/35° C.— 1s. 7d. to 1s. 8d. per lb. in ton lots
DICHLORANILINE.—2s. 1½d. to 2s. 5½d. per lb.
DIMETHYLANILINE.—Spot, 1s. 7½d. per lb., package extra.
DINITROBENZENE.—7½d. per lb.
DINITROCHLORBENZENE, SOLID.—£79 5s. per ton.
DINITROTOLUENE.—48/50° C., 8½d. per lb.; 66/68° C., 11d.
DIPHENYLAMINE.—Spot, 2s. 2d. per lb.; d/d buyer's works.
GAMMA ACID, Spot, 4s. 4½d. per lb. 100%, d/d buyer's works.
H ACID.—Spot, 2s. 7d. per lb.; 100%, d/d buyer's works.
NAPHTHIONIC ACID.—1s. 10d. per lb.
β-NAPHTHOL.—£97 per ton; flake, £94 8s. per ton.
α-NAPHTHYLAMINE.—Lumps, 1s. 1d. per lb.
β-NAPHTHYLAMINE.—Spot, 3s. per lb.; d/d buyer's works.
NEVILLE AND WINTHER'S ACID.—Spot, 3s. 3½d. per lb. 100%.
o-NITRANILINE.—4s. 3½d. per lb.
m-NITRANILINE.—Spot, 2s. 10d. per lb. d/d buyer's works.
p-NITRANILINE.—Spot, 1s. 10d. to 1s. 11d. per lb. d/d buyer's works.
NITROBENZENE.—Spot, 4½d. to 5d. per lb., in 90-gal. drums, drums extra, 1-ton lots d/d buyer's works.
NITRONAPHTHALENE.—9½d. per lb.; P.G., 1s. 0½d. per lb.
SODIUM NAPHTHIONATE.—Spot, 1s. 11d. per lb.; 100% d/d buyer's works.
SULPHANILIC ACID.—Spot, 8¾d. per lb. 100%, d/d buyer's works.
o-TOLUIDINE.—10½d. per lb., in 8/10 cwt. drums, drums extra.
p-TOLUIDINE.—1s. 10½d. per lb., in casks.
m-XYLIDINE ACETATE.—4s. 3d. per lb., 100%.

Latest Oil Prices

LONDON, June 14.—LINSEED OIL was firmer. Spot, £27 10s. (small quantities); June, £25; July-Aug., £25; Sept.-Dec. £24 17s. 6d.; Jan.-April, £24 17s. 6d. SOYA BEAN OIL was steady. Oriental, June-July shipment, c.i.f. (bulk), £18. RAPE OIL was quiet. Crude extracted, £13 10s.; technical refined, £32 15s., naked, ex wharf. COTTON OIL was easier. Egyptian crude, £18; refined common edible, £22; deodorised, £24, naked, ex mill (small lots £1 10s. extra). TURPENTINE was quiet. American, spot, 34s. 3d.; June, 33s. 9d.; July-Aug., 33s. 3d. per cwt.

HULL.—LINSEED OIL, spot, £25 5s. per ton; June, July-Aug. and Sept.-Dec., £24 15s. COTTON OIL, Egyptian, crude, spot, £17 15s.; edible, refined, spot, £20 15s.; technical, spot, £20 15s.; deodorised, £22 15s., naked. PALM KERNEL OIL, crude, f.m.q., spot, £18 10s., naked. GROUNDNUT OIL, extracted, spot, £23 10s.; deodorised, £26 10s. RAPE OIL, extracted, spot, £30 10s.; refined, £31 10s.. SOYA OIL, extracted, spot, £25; deodorised, £28, per ton. COD OIL, f.o.r. or f.a.s., 25s. per cwt., in barrels. CASTOR OIL, pharmaceutical, 39s. 6d.; first, 34s. 6d.; second, 32s. 6d. per cwt. TURPENTINE, spot, nominal.

COMPANY MEETING

Beechams Pills, Limited

New Record in Profits—Encouraging Outlook—Medicine Duty Repeal

Mr. Philip E. Hill's Speech

THE eleventh ordinary general meeting of Beechams Pills Ltd. was held on Thursday, June 8, at the Hotel Victoria, London.

Mr. PHILIP E. HILL (chairman of the company) presided.

The SECRETARY (Mr. H. G. L. Lazell, F.C.I.S.) read the notice convening the meeting and the report of the auditors.

The CHAIRMAN said:—Ladies and gentlemen,—The profit of £723,063 creates a new record in the company's history. The year under review has been a most eventful one, not only from the company's point of view in the acquisition of two very important new businesses—Macleans and Enos—but also from the extremely difficult trading conditions which have existed (and to some extent still exist), occasioned by world affairs.

Turning first to the directors' report and balance sheet, which you have received, you will notice from your report that the bonus issue of preference shares and the increase in the deferred capital of your company have been given effect to. For the convenience of shareholders we have set out in the directors' report a table showing a comparison of the dividends received and receivable by holders of the shares in their original 5s. form as compared with the dividends such shareholders received last year. You will notice from this that original holders of such shares have received one-half per cent. more in dividend and those of them who retained their Redeemable Cumulative Preference shares, issued to them as a bonus last year, have also, of course, received their dividends on those shares.

After charging the expenses of the Eno offer, increase of capital, and expenses of the issue of Deferred shares of 2s. 6d., and transferring to profit and loss account in accordance with Article 128 of the company's articles of association the sum of £245,000, there still remains to the credit of share premium account the sum of £956,928, which is sufficient to offset the figure of goodwill appearing in our balace sheet.

Let me refer to the prospects of the present year. Although we are all tired of the continual references to "unsettled political conditions," unfortunately any predictions which we may make with regard to the future must be subject to a nearer return to normality.

Eno Acquisition and Export Trade

Dealing first with export trade, which I consider of the highest importance both from the point of view of your company but even more so from a national standpoint, I feel that this present year should exceed anything hitherto achieved.

When your directors purchased the Eno business one of their principal motives in doing so was to take advantage of the widespread export organisation belonging to that company and to obtain the benefit of its specialised export experience covering a long period of time.

We have already made arrangements for our company and its subsidiary and associated companies to take advantage of Enos unique position. We are utilising their factories and old-established selling organisations throughout the world to manufacture and sell our lines and when this policy has been fully developed it should result in big economies in manufacturing and selling costs. Enos export director has just completed a comprehensive tour of Egypt, India, Ceylon, Malaya, New Zealand, and Australia, while our own export manager has just returned from an extensive tour of the West Indies, U.S.A., Canada, and thhe South and Central American markets.

Sales to date show steady progress all round and we are justified in anticipating important increases in our overseas profits.

Turning to our home trade, last year we received only a portion of the annual profits from Macleans and Enos, and this year we shall have the benefit of a full year's trading. Since the acquisition of the Maclean and Eno businesses we have been able to effect very considerable economies in manufacture, administration, and selling, a considerable portion of which economies will be realised in this year's accounts. We should be able to look forward to sales reaching a higher level, and we anticipate successful results from Livaclean and Lucozade—two new lines marketed by Macleans.

Proposed Repeal of Medicine Duties

An event of outstanding importance during the past year —probably the most important event which has ever happened in the history of the proprietary medicine and proprietary article business—is the proposed repeal of medicine duties. It is, of course, too early for one to make any accurate forecast as to the extent of the benefit it will prove to our business; but one thing is already abundantly clear, and that is, that it opens up a vista of great possibilities.. When the repeal comes into force, as presumably it will in September next, a much wider field of distribution will be available. Exactly how we shall deal with that is a matter which requires the most careful consideration.

We have already been approached by some of the largest potential distributors in the country, who, in consequence of the conditions which previously existed, have in the past been prevented from dealing in our type of merchandise. There is also no doubt that as we get nearer to September, we shall be approached by many others. Our first consideration will be to deal fairly and equitably with the whole of our distributors—old and new, large and small.

Benefits to Public

We hope that the repeal of the medicine duties will enable us to provide the public with our products in a smaller and cheaper form than has hitherto been possible, and our first aim, as far as the public is concerned, must be to give increased service and value. The success of the proprietary medicine and article business rests entirely upon this foundation.

This company, through the long period of its existence, has always had the most friendly relationships with the chemists and druggists of the country, and no effort will be lack-

ing on our part to maintain the cordial relations which have hitherto existed.

We understand that representations are being made to the Government with regard to the reasonable control of the formulæ and advertising of proprietary medicines. Your directors would give their whole-hearted support to such proposals, as any measure that is introduced to safeguard the public, as far as proprietary medicines are concerned, must react favourably on this company.

New Development

Your directors are pursuing their policy of sponsoring new lines from the development fund, and they ask you again to bring this fund up to £100,000. The new laboratory at the Royal Northern Hospital, London, has once again rendered yeoman service to the Group, and I should like to place on record your directors' appreciation of the advice and help given to them by Mr. Herbert Skinner and his staff in connection therewith.

At the conclusion of this meeting an Extraordinary General Meeting will be held, of which shareholders have already received statutory notice, for the purpose of altering the company's articles of association so that the maximum rate of underwriting commission (10 per cent.) payable by the company on shares offered for subscription (at present calculated on the nominal amount thereof) may be calculated on the issue price thereof. It will be seen that the notice also contains a resolution ratifying the payment of the underwriting commission made in connection with the issue of Deferred shares of 2s. 6d. each in September of last year of 4d. per share, which represented less than 5 per cent. of the issue price of 7s. 6d. per share.

Owing to the issue price of such shares having been three times the nominal amount thereof, the powers conferred by the existing articles were inadequate for the payment of the necessary commission, and it is now desired to confirm this payment and to extend the limit of commission up to the limit permitted by the Companies Act, 1929, namely, 10 per cent. of the price at which the shares are issued.

In view of the present magnitude of the Group, shareholders are also asked to alter the articles of association so that the number of the directors shall be increased from 10 to 12.

Current Year Viewed with Confidence

In conclusion I feel I am not unduly optimistic in looking forward to this year's results with added confidence. Personally, I shall be very disappointed if this time next year I am not able to refer to the fact that the record of profits established this year has been well broken. I have always had the greatest belief in the future of this business, and I feel that its prospects to-day are greater than at any time since its formation.

The chairman concluded by moving the adoption of the report and accounts.

MR. J. STANLEY HOLMES, M.P. (managing director), seconded the resolution and it was carried unanimously.

The retiring directors, Sir Arthur H. Marshall, K.B.E., Major H. E. Meade, O.B.E., Mr. Ashley S. Maclean, Mr. Bernard L. Hobrow (assistant managing director), and Mr. Henry Gregory, were re-elected, and the auditors, Messrs. Price, Waterhouse and Co., were re-appointed.

At a subsequent Extraordinary General Meeting a resolution was passed altering the articles of association dealing with the amount of underwriting commission payable on issues of shares, and increasing the maximum number of directors from 10 to 12.

A hearty vote of thanks was passed to the chairman, directors and staff.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

Mortgages and Charges

(Note.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.)

FLEETWOOD CHEMICAL CO., LTD., London, S.E. (M., 17/6/39.) May 20, £1,080 debentures; general charge *£1,125. July 11, 1938.

GLUCOSE AND BY-PRODUCTS, LTD., London, E.C. (M., 17/6/39.) May 26, series of £30,000 debentures, present issue £26,000; general charge. *£16,000. Jan. 13, 1939.

MANCHESTER OIL REFINERY, LTD., London, E.C. (M., 17/6/39.) May 25, agreement for debenture stock securing to Lonsdale Investment Trust, Ltd., £30,000 advanced on entering into the agreement and intended to be secured by an issue of debenture stock, forming part of £290,000 to be created by the company. The debenture stock is intended to confer a 1st general charge. *£352. Sept. 21, 1938.

Satisfactions

ELEPHANT CHEMICAL CO., LTD., London, S.E. (M.S., 17/6/39.) Satisfaction May 26, of charge registered April 12, 1933.

FLEETWOOD CHEMICAL CO., LTD., London, S.E. (M.S., 17/6/39.) Satisfaction May 20, of debentures registered December 4, 1922, to extent of £1,370 and balance of £1,630 cancelled.

HEDLEY AND CO. (LEYTONSTONE), LTD., London, E., manufacturing chemists. (M.S., 17/6/39.) Satisfaction May 30, £875, registered August 9, 1916.

STRONTIUM PRODUCTS, LTD., Bristol. (M.S., 17/6/39.) Satisfaction May 24, of mortgage registered November 18, 1926.

Company News

General Products Corporation (Chemicals), Ltd., have increased their nominal capital by the addition of £1,000, beyond the registered capital of £1,000.

Thomas Hedley and Co., Ltd.—A reduction in the capital of the company from £500,000 to £435,000 was approved by Mr. Justice Crossman in the Chancery Division on Monday.

The United Indigo and Chemical Co., Ltd., have declared a dividend at the rate of 5 per cent. per annum for the six months ending June 30, 1939, on the 5 per cent. cumulative participating preference shares.

Titanine, Ltd., makers of aeroplane dopes, cellulose and synthetic lacquers, etc., have declared a final dividend of 12½ per cent., making 22½ per cent. for the year ended March 31 (20 per cent.). Net profits for the year amount to £39,100 (£23,623).

The Morgan Crucible Co., Ltd., report a trading profit for the 15 months ended March 31 of £543,590 (£552,409). Net profits for the period work out at £426,426 (£387,905). A final dividend of 1s. 2d. per £1 of ordinary stock has been declared making 1s. 11d. for the 15 months (1s. 8d.).

Vitamins, Ltd., report profits for the year to March 31, before allowing for income tax and N.D.C., of £43,010 (£29,528). A final dividend of 25 per cent. has been declared raising year's total from 22½ to 35 per cent. After placing £7,500 (£5,000) to general reserve, carry forward is £7,085 (£4,767).

Lovering China Clays, Ltd., report that profits, after fees and other expenses, declined from £25,048 to £15,299 in the year ended March 31 last. After charging £15,487 for debenture interest and interest on arrears of debenture interest, there is a net loss of £187. The debit balance carried forward is raised from £22,364 to £22,399.

The Yorkshire Dyeware and Chemical Co., Ltd., report a net profit for the year to March 31 of £30,754 (£38,615); less interest on debenture stock, £3,719 (£3,816); final dividend of 5 per cent., making 10 per cent. (same); bonus, nil (6½ per cent.); to research fund, £3,000 (£2,000); to reserve fund, £5,000 (£3,000); to reserve for A.R.P. expenditure, £1,000 (nil); forward, £7,524 (£7,615).

The Anglo-Iranian Oil Co.'s preliminary figures for 1938 show that profits, before providing extra depreciation, amount to £6,109,477, compared with £7,455,094. A final dividend of 15 per cent., less tax, has been recommended, making a total of 20 per cent., less tax. In 1937 a total dividend of 20 per cent. plus a cash bonus of 5 per cent. was paid. Extra depreciation absorbs £602,602 (£744,215) and the carry-forward is £108,141 up at £625,552.

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